EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief
IRWIN H. SUCH
Editor
WM. M. ROONEY
News and Markets Editor
D. B. WILKIN
Engineering Editor
J. D. KNOX
Steel Plant Editor
GUY HUBBARD
Machine Tool Editor
DON S. CADOT
Art Editor
ALLEN G. GRAY
Consulting Editor

ASSOCIATE EDITORS

G. H. MANLOVE • W. J. CAMPBELL
JAY DEEULIS • F. R. BRIGGS
VANCE BELL

ASSISTANT EDITORS

JOHN PARINA JR. • H. C. TUTTLE
HENRY J. HOLTZ • DOLORES K. BLAHA
WALTER F. TOERGE • RICHARD D. CONLY

RESIDENT EDITORS

E. C. KREUTZBERG
Washington Editor
L. M. LAMM
Associate Editor, Washington
B. K. PRICE
Eastern Editor, New York
L. E. BROWNE
Associate Editor, New York
E. F. ROSS
Chicago Editor
J. C. SULLIVAN
Pittsburgh Editor
A. H. ALLEN
Detroit Editor
VINCENT DELPORT
European Editor, London

EDITORIAL CORRESPONDENTS

R. W. KINCEY, *Birmingham*
L. C. FELDMANN, *Buffalo*
SAMUEL S. CARR, *Cincinnati*
MAC HUTCHENS, *St. Louis*
GEORGE R. REISS, *Youngstown*
MAURICE BEAM, *Los Angeles*
ROBERT BOTTORFF, *San Francisco*
R. C. HILL, *Seattle*
C. K. CATES, *Dallas*
F. S. TOBIN, *Toronto*
J. A. HORTON, *Birmingham, Eng.*

MAIN OFFICE

Penton Building, Cleveland 13, Ohio

BRANCH OFFICES

New York 17 ..... 16 East 43rd St.
Chicago 11 ..... 520 North Michigan Ave.
Pittsburgh 19 ..... 2800 Koppers Bldg.
Detroit 2 ..... 6560 Cass Ave.
Washington 4 ..... 956 National Press Bldg.
Los Angeles 4 ..... 130 N. New Hampshire Ave.
London ..... 2 Caxton St., Westminster, S.W. 1

• • •

Published by THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio, E. L. SHANER, President and Treasurer; G. O. HAYS, Vice President and General Manager; R. C. JAENKE, Vice President; F. G. STEINEBACH, Vice President and Secretary; E. L. WERNER, Assistant Treasurer.

Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers' Association.

Published every Monday. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $6; two years $10; all other countries, one year $12. Single copies (current issues) 25c. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

Copyright 1946 by the Penton Publishing Co.

Business Staff on Page 4

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 119, NO. 6 AUGUST 5, 1946

NEWS

More Realistic Pricing Expected 91
Labor Shortage May Limit Record Output of Consumer Goods, Small Warns 92
Unions Seeking To Hold Gains 94
Pressure Eases for Some Types of Machinery 95
Steel Earnings Drop in First Half 96
Chief Production at Geneva Will Be Plates and Shapes, Says Olds 97
Charles R. Cox Named President of Carnegie-Illinois Steel Corp. 97
Bethlehem Plans Big Expansion 98
Manufacturing Revival Threatened Unless Copper Shortage Is Relieved .. 99
Pig Iron Production Scores Gain in June 99
Fundamental Research Program in Metallurgy Being Pushed by Navy ... 103
French Seek To Increase Coal Output 104
West Coast Steel Trade Holds Price Line 112
Structural Fabricators Report California Prospects Promising 113
First Aluminum Poured at Mead Reduction Plant Since Last November .. 113

TECHNICAL

Latest Operator Techniques in Lead Welding 120
Engineering News at a Glance 123
Analysis of Electroplating "Strike" Solutions 124
Surgical Instrument Making Combines Hand Work and Modern Methods.. 126
Various Applications of Abrasive Belt Grinding 128
Aluminum Roofing Used in Replacing Huge Dome-Shaped Roof 132
Application of Insulating Varnish by New Process Saves Time 134
Welded Foundry Equipment Proves More Economical 136
Internal Pressure Chart Gives Safe Working Pressures for Tubes 144
Brazilian Steel Plant Increases Capacity with New Equipment 146

FEATURES

As the Editor Views the News .. 87
Present, Past and Pending 95
Windows of Washington 100
Mirrors of Motordom 107
Activities 110
Men of Industry 114
Obituaries 119
Industrial Equipment 152
The Business Trend 178
Construction and Enterprise 196

MARKETS

Scrap Famine Threatens To Cut Steel Production Rate 181
Market Prices and Composites 182

Index to advertisers 212

NEXT WEEK...

Low Temperature Behavior of Ferritic Steels
Volume Production of Aluminum Sand Castings
Scientific Evaluation of Metal Cleaners
Revised Hot Dip Galvanizing Processes
Latest Features of Magnetic Chucking

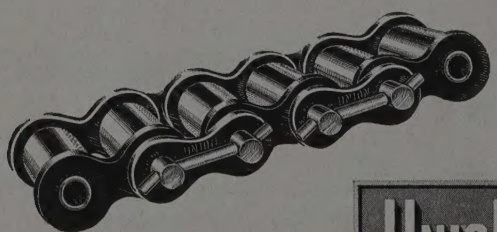
CROWN HER! . . .

Not just good but best—that's good Queen Bess! She's in a class by herself, an arrant specialist if there ever was one. Milk and milk alone is her line, and in her line good Queen Bess is a terrific perfectionist.

SPROCKET CHAINS . . .
and Sprocket Chains Alone Are Our Business

Just sprocket chains. Sprocket chains morning, noon and night. We're specialists—and even, we like to think, perfectionists. Do you see, then, why so many manufacturers, alive to the economical, efficient, trouble-free performance of sprocket chains for power transmission and materials handling, like to entrust the solution of their problems to specialists here at Union Chain?

The Union Chain and Manufacturing Company - Sandusky, Ohio



Union Finished Steel Roller Chain is manufactured in all standard sizes from ⅜ in. to 2½ in. pitch, in single and multiple strands.

UNION CHAINS

Union Chains for Every Application

Drive and Conveying Chains and Sprockets
- Bridge Chain
- Combination Malleable Iron and Steel Chain
- HB (hardened bearing) type chain
- BP (bar and pin) type chain

★

Finished Steel Roller Chains and Sprockets
- All manufacturer's standard, size ⅜ in. to 2½ in. pitch
- Single and Multiple Strands
- Extended Pitch Series in sizes 1¼ in. to 4 in. pitch

★

Silent Chain and Sprockets
- All sizes ⅜ in. to 1½ in. pitch

★

Flexible Couplings
- Roller chain type
- Silent chain type

As the EDITOR VIEWS the NEWS

Government in Business

With Congress about to recess, the nation faces a period of several months during which time the executive department of the government will function under unusual circumstances. Although the war ended nearly a year ago, this fact has not been proclaimed officially. As a result, public affairs of the nation are being administered by the government as if a state of war still exists. In the coming months the President, in the absence of a Congress in session, will have exceptional opportunities to determine to what extent he wishes to employ or ignore the extraordinary powers that were granted his office in wartime.

During this period it will be interesting to note the President's action in regard to problems affecting American business. Because the administration repeatedly has advocated the retention of the private enterprise system, one wonders just how to interpret a number of recent developments which seem to threaten that system.

A case in point is the present coal mine situation. The government seized the mines more than two months ago. It made contracts with the United Mine Workers without the consent of the mine owners. It assumes that the owners have no rights in regard to the operation of their properties. The mine owners would find it difficult and perhaps impossible to operate their mines under the contracts which the government negotiated with the union. Therefore, to consider turning back the mines to their owners at this time would be tantamount to involving another work stoppage, which would be disastrous. The alternative is to continue to withhold the mines from the owners indefinitely.

This possibility prompted the editor of the "Pittsburgh Press" to declare that "the coal mines have been virtually nationalized by default" . . . without public approval or congressional legislation.

Another development with disturbing implications was the action of the U. S. Maritime Commission in advertising for bids for two luxury liners. This action since has been held in abeyance, presumably for reason of retrenchment in government expenditures, but the question as to why a government bureau instead of a private ship operating company should be contemplating the construction of ocean vessels in peacetime still is pertinent.

The legal fiction that the nation still is at war is a constant temptation to government officials to perpetuate policies which threaten private enterprise. Until the end of the war can be declared officially, every government move to encroach farther upon the preserves of private business should be challenged vigorously.

STEEL
August 5, 1946

BELATED AWAKENING: Some encouraging news came out of Detroit the past few days. This was to the effect the CIO has abandoned, at least for the present, any thought of presenting industry with new wage demands to offset the rising cost of living.

It seems the union leaders, who have been holding strategy meetings, have come around to the idea that it will be more advantageous to direct their efforts towards preserving the purchasing power of the dollar rather than by presenting wage demands which might give another fillip to the inflationary spiral.

Union leaders feel most of the wage advance of 18½ cents per hour won last spring through strikes and work stoppages has been wiped out by rising prices over the past several months. They are critical of Congress, which they claim turned its back on labor in enacting price control legislation stripped of a good deal of its power to regulate the nation's economy. And they are determined to recoup lost ground.

How different the economic picture would be today had organized labor early in the year abandoned the idea that higher wages could be exacted from industry without accompanying increases in prices.

(OVER)

Totally ignoring the simple economics of the situation, the unions played their mad gamble for higher wages, and labor now is paying for its gains in higher living costs. Evidently, if the report from Detroit is borne out by developments, the unions at last have learned that you just don't get something for nothing; that everything must be paid for in one way or another, even wages. —pp. 91, 94

• • •

NOT OUT OF WOODS: That concerted efforts of manufacturing industry to catch up with the accumulated civilian goods demand of the war years at last are bearing fruit is borne out by production data just released. According to John D. Small, CPA administrator, factory output hit a new postwar peak in June with all prewar monthly production records toppled in washing machines, vacuum cleaners, gas ranges, electric irons and radios.

In the circumstances one would be tempted to take an optimistic view of the outlook. However, conditions, while markedly improved compared with the first half of the year, still are not wholly reassuring for the immediate future.

Barring further work stoppages, the going should become smoother as time passes. It is apparent, however, that achievement of production records in the last half of the year will be anything but a sinecure. Supply shortages are preventing capacity operations and there is little prospect of substantial relief on this score, especially in steel, for months to come. Added to this is the fact labor scarcities are appearing with expanding manufacturing operations. Obviously, it is still too early to think we are out of the woods production-wise. —pp. 92, 99

• • •

LEAD'S FUTURE: It appears far-fetched to link the atom bomb with lead welding. But in view of information trickling out in the wake of the last two atomic explosions—that lead seemed to be the only metal with properties to arrest effectively the deadly radio-active rays—lead welding may be in for its greatest boost under the spur of coming research.

Biggest advancement in lead welding came from development of hydrogen gas. Shortage of tin, and expanded use of industrial x-ray devices by metal industries in the war just ended resulted in consumption of large amounts of lead for walls and floors in setting up x-ray installations. Already one company is experimenting with spot welding of lead to terne plate in connection with x-ray equipment.

In discussing satisfactory types of joints with lead welding, it is pointed out the operation is true autogenous welding which joins two pieces of lead without the addition of any foreign metal or flux. Inasmuch as lead melts at a comparatively low temperature, only the smallest of welding torch tips is employed in joining operations. —p. 120

SIGNS OF THE TIMES: Flood of price regulations accompanied (p. 91) resumption of modified government price control. Newly appointed decontrol board is expected to judiciously remove controls from products in plentiful supply and at the same time hold a restraining hand on rising living costs. . . . Second quarter financial statements of the steel companies (p. 96) show most producers in the black. However, effects of early-year strikes in steel and coal so affected earnings a number of producers would have returned a loss for the first six months had they not dipped into reserves set up to cover abnormal war costs. . . . Facing unprecedented peacetime demand, steelmakers are pressing new plant construction programs. Bethlehem Steel Co. last week projected (p. 98) further large expansion of its Sparrows Point, Md., works, this to consist of additions to pig iron, steelmaking and coke producing facilities to support the company's enlargement program in flat-rolled steel announced months ago. . . . In making surgical instruments, produced almost wholly by forging from dies on hand (p. 126) manufacturers keep in store literally thousands of dies. Sometimes certain specific jobs require use of as many as 85 to 90 dies. . . . Acute shortage of copper is retarding operations in the automotive, electrical and housing industries (p. 99) and the delay is accelerating inflation, Donald C. Dallas, copper industry executive warns, pointing out that unless conditions are improved quickly production curtailment will be forced in many directions. . . . Seriousness of the scrap shortage is called to the attention of manufacturers (p. 99) by CPA Administrator Small in an appeal for co-operation in the current government salvage drive. Early removal of steelmaking furnaces from the active list threatened unless scrap soon begins moving to the mills in larger volume. . . . To replace the dome-shaped roof of Cincinnati's Union Terminal (p. 132) about 1123 sections of preformed and precurved 14-gage aluminum sheets were required to cover its 32,000 square feet. . . . Outlook for the structural fabricating industry on the Pacific Coast is considered bright (p. 113) with current construction backlog building up to record heights. . . . French industrialists are centering efforts on increasing coal production (p. 104) to offset the lag in imports. . . . Washington bureaucracy has been criticized from time to time as inefficient (p. 100) but criticism largely is directed to the new agencies, majority of the long-established bureaus and departments reportedly functioning smoothly.

E. L. Shaner

EDITOR-IN-CHIEF

STEEL
August 5, 1946

The Office of Price Administration moved rapidly to check inflation following President Truman's signing into law a compromise bill restoring government controls on prices. Holding the bill, the President congratulates Paul Porter, OPA administrator, after the signing ceremony. NEA photo

More Realistic Pricing Expected

New Decontrol Board thought likely to adopt more rational policy than was followed by old OPA. Revival of price control greeted with mixed sentiment but watered-down law generally is accepted as not too oppressive

By WILLIAM M. ROONEY
News & Market Editor, STEEL

IT WAS not clear last week just how tightly the hand of government would continue clinched about the national economy.

Revival of federal price control was greeted with mixed sentiment throughout the nation, but there appeared to be general acceptance of the watered-down controls as not too oppressive. At the same time there was widespread agreement future control policy as administered by the new decontrol board likely would be in the direction of more realistic pricing than was experienced under the old OPA.

Actually, under the new control authority, the future of pricing appears to be out of the hands of the Office of Price Administration, major policy-making with respect to prices being vested in the decontrol board. This board, provided for in the extender legislation, will act as a sort of supreme authority in deciding what commodities and manufactured products should be controlled, and when they should be decontrolled. It is charged with the delicate task of getting the economy back onto the peacetime track and already is at work.

The board consists of Roy L. Thompson, president, Federal Land Bank of New Orleans and former economics professor at Louisiana State University, Daniel W. Bell, president American Security & Trust Co. of Washington, former acting director of the budget and undersecretary of the Treasury, George H. Mead, chairman, Mead Pulp & Paper Co., Dayton, O., and a member of the Office of War Mobilization & Reconversion's advisory board.

Under provisions of the new Price Control Act the decontrol board will have the last word in determinations and can overrule the Office of Price Administration and the Secretary of Agriculture in deciding what commodities and products should be freed from price ceilings or brought back under them. In addition to the three board members, the OPA extension law provides a secretary for the decontrollers, and also permits establishment of a hearing commission, "in the event the number of petitions for decontrol reach a point justifying it."

The board may be asked for a ruling on petitions for decontrol denied by Price Administrator Paul Porter and these appeals may be brought on negative findings from the OPA by any of the 685 industry advisory committees representing every type of controlled product.

Immediately upon being sworn into office the decontrol board gave as its first pledge a promise it will do everything possible to halt the rising cost of

living. Speaking for the board, Chairman Thompson said: "The Congress has made it clear that our job is twofold: First, to remove controls speedily from commodities which are produced in such quantities that normal competition can keep prices stable; second, to make sure that all commodities which are important to living costs or business costs are kept under price control as long as necessary.

Since revival of OPA, a little more than a week ago, thousands of manufacturers have been granted price relief through issuance of over 200 orders, (see page 93) some of which upped ceilings, and others completely decontrolling certain products.

Generally speaking, prices on products not specifically exempted or raised by OPA, have been rolled back to those levels in effect on June 30. Few rollbacks were necessary in manufactured goods, the price line having been rigidly held throughout the period of decontrol. In iron and steel only one rollback of any consequence was necessary, that being on southern pig iron on which one producer had raised prices $3 per ton. And even the rollback here was only partial, since OPA last week officially permitted a formal markup of $2 per ton.

Last week OPA began issuing new orders in conformity with the provisions of the new price control law, this move allowing an average 6 per cent boost in retail ceilings on farm machinery and replacement parts. This action was entirely separate from the agency move in granting scores of price increases and ordering numerous decontrols immediately upon its rebirth. These latter advances had been pending when the agency expired June 30.

No Immediate Increases Seen

In the iron and steel trade expectations are no immediate increase in prices is likely though producers have been desirous of receiving relief for some time past. Indications last week were that there was little likelihood of any substantial change in steel prices until OPA completes a study of the cost situation in the industry, which study had been projected prior to the expiration of OPA June 30.

Certain iron and steel products in plentiful supply are expected to be decontrolled over coming weeks. As a matter of fact, OPA last week decontrolled large rivets and track bolts effective July 27, two days after the agency was revived.

No immediate change is expected in iron and steel warehouse prices. Under the new control law it is not possible for the distributors to recoup past cost increases which they were forced to absorb. However, any future price increases by the mills can be immediately passed on to consumers by the warehouses.

First activity of the new three-member price decontrol board was to take oath in Washington from Hugo L. Black, associate justice of the U. S. Supreme Court. Left to right are the decontrol board members, George M. Mead of Dayton, O., Roy L. Thompson of New Orleans, and Daniel W. Bell of Washington. With them are Reconversion Director John R. Steelman and Justice Black. NEA photo

With revival of price control, government wage controls have been resurrected under the Wage Stabilization Board which must rule on what part of wage increases can be calculated as the basis for higher prices. Some 2300 wage cases are understood to be pending.

Price control as now in effect represents a compromise between differing viewpoints in the Congress and the administration. The law as finally passed by Congress and "reluctantly" signed by President Truman provides for (1) extension of the life of OPA until June 30, 1947, and maintenance of dollar-and-cents ceilings on most commodities during that period; (2) restoration of rent ceilings at the levels of June 30, without refunds; (3) exemption from price controls until Aug. 20 of meat, poultry, grains, dairy products and a number of other key commodities; (4) creation of a three-man "decontrol" board empowered to lift ceilings at will but also with equal powers to recontrol, for example, by re-establishing ceilings on exempted food after Aug. 20; (5) establishment of 1940 prices (plus increased costs since) as a basis for price ceilings.

Co-incident with the return of modified government price control, significance is attached to appointment of an Economic Advisory Council, established by the Full Employment Law passed last February. Personnel of this new board was completed only last week when Edwin G. Nourse, vice president, Brookings Institution, agreed to head the body.

Labor Shortage May Limit Record Output of Consumer Goods in Second Half, Small Warns

DUE TO the rapid recovery in the steel and coal industries, a "record volume" of consumer goods may be produced in the next six months, Civilian Production Administrator John D. Small predicted last week. Factory output established a new postwar peak in June, although some slumps were noted.

Prewar monthly records were exceeded in washing machines, vacuum cleaners, gas ranges, electric irons and table model radios. Automobile production dropped in June from May but increased in July while farm equipment output declined 3 per cent in June.

Additional gains in production were recorded in July, Mr. Small said, in spite of uncertainties concerning price controls and the adverse effects on production resulting from holidays and vacation periods. He warned, however, it is probable that a "serious shortage of labor is developing."

Industrial demand for workers has been so great during the last 12 months that unemployment has risen only 1,600,000 despite the fact that 10 million veterans and 50 million war workers have been discharged into the labor market during that period.

GOVERNMENT CONTROL DIGEST

Weekly summaries of orders and regulations issued by reconversion agencies. Symbols refer to designations of the orders and official releases. Official texts may be obtained from the respective agencies

OFFICE OF PRICE ADMINISTRATION

Household Appliances: Small-volume manufacturers of parts for household cooking and heating stoves, vacuum cleaners, washing machines and refrigerators may now qualify for reconversion pricing, effective July 26. Profit factor for metal office furniture is changed from 5.4 per cent to 2.9 per cent. (SO-118; OPA-T-4776)

Thermostats: Price increase factor for manufacturers of thermostats for domestic gas and electric kitchen ranges raised to 19 per cent over October, 1941, prices. (MPR-188; OPA-T-4760)

Wirebound Boxes: An interim increase of 16 per cent in producers' ceiling prices for industrial wirebound boxes authorized, effective July 26. (MPR-485; OPA-T-4756)

Firebrick: Effective July 26, manufacturers selling insulating firebrick on a delivered price basis may increase prices 20.1 per cent and those selling on an fob plant basis are allowed a 21.6 per cent advance. Resellers may add to their maximum prices the percentage amount of the increased cost except when prices are set by area pricing orders. (MPR-592; OPA-T-4758)

Wire Nails, Fence Wire: Jobbers of standard wire nails and fence wire have been provided alternative methods for computing ceiling prices for carload and less-than-carload lots, with varied provisions for computing prices in free-delivery areas and sales outside free-delivery areas. (MPR-49; OPA-T-4796)

Construction Refractories: Manufacturers of fireclay, silica brick, and some other construction refractories specifically allowed to apply the 11 per cent increase granted in April, 1946, to the prices rounded off to the nearest five cents following the 6 per cent increase granted in June, 1945. (MPR-592; OPA-T-4767)

Mechanical Building Equipment: Thousands of mechanical building equipment are suspended from price controls, including: Long span steel joists, all sizes and types of iron valves, large sized fittings (malleable over 4 in., drainage over 6 in.), cast brass and bronze hardware, ball bearing hinges, fancier types of electrical and nonelectric control equipment for comfort heating and cooling, water coolers, fire fighting (standpipe) equipment, sprinkler (fire protection) equipment. (SO-129; OPA-T-4800)

Tools and Kitchenware: Manufacturers in the following industries may adjust their ceiling prices by whatever amount is necessary to yield the percentage profit margin listed below. New ceilings will go into effect automatically at the end of 20 days after a firm has reported to OPA. The industries and permissible profit percentages are: Cutlery, pruning equipment and scythes, 3 per cent; step ladders, 4.4 per cent; gasoline, oil and kerosene lanterns, 3 per cent; logging tools, axes, adzes, hatchets, 3 per cent; hand-operated oilers and grease guns, 3 per cent; soldering irons and coppers, 3 per cent; blow torches and fire pots, 4.3 per cent; wheelbarrows, 3.8 per cent; hand-operated insecticide sprayers and dusters, 3 per cent; washboards, 6.2 per cent; ironing boards and ironing tables, 3 per cent; tinware and galvanized ware (household, covered by consumer durable goods regulation), 3.8 per cent; wood tool chests, 3.6 per cent. (SO-160; OPA-T-4749)

Price Control Suspension: Several metals and miscellaneous metal products suspended from price control July 26, including in part the following: Arsenic tri-oxide, cadmium metal, cadmium oxide and cadmium sulphate, metallic arsenic, bismuth metal and alloys, braided cord with wire core (for use other than for transmission of electric current), cast brass type, cotterpins, railway car journal bearings subject to MPR-125, high-alloy castings as defined in MPR-214, dowel bars for concrete pavings, expansion devices for concrete paving, florists' wire, highway traffic guards (iron or steel), ice cream metal cans, solid steel rivets (½-in. diameter and over), field-erected steel storage tanks, track bolts, wire shoe nails and iron and steel engineered precision die, mold, pattern and grinding plate castings, produced to close tolerances and fine finishes, where no further machining is required except to match surfaces or parting lines, to chrome plate surfaces or to provide holes for guide pins.

The following products also have been suspended from price control: Several types of clocks, machine-attached snap fasteners, household television receiving sets, low-back chairs, automobile seat-bed units and awnings.

Also lifted from price control are many types of electrical equipment, machine tools, distillery and brewery equipment, refinery equipment, ceramics machinery, hat shop machinery, tobacco processing equipment, and poultry farm and bee keeper equipment. (SO-129; OPA Nos. 6627, 6628, 6633)

Carriers: Price control has been suspended as of July 26 on charge of contract carriers by water operating on the Great Lakes. Indications are that these carriers propose increases up to 15 per cent on all bulk commodities other than grain. (SR-11)

Lead: Price of primary lead contained in each gallon of 100 per cent pure lead pigment increased 1.75 cents per pound, effective July 26. (MPR-188; OPA-T-4729)

Shipping Containers: Prices of 12½-lb and 25-lb capacity steel shipping containers used by producers of white and red lead advanced 10 per cent July 26. (SO-14G; OPA-T-4782)

Machinery: Manufacturers of specified machinery items that have been suspended from price control must continue to notify OPA whenever a price is changed. This applies to manufacturers of the following products: Machine tools; electrical, electrically or magnetically actuated instruments for indicating, measuring, recording or testing electrical quantities, not including automotive or electronic testing instruments; automotive testing and maintenance equipment subject to MPR-136; buffing and polishing wheels; air and gas compressors and dry vacuum pumps which normally are driven by prime movers of more than 10 horsepower, and assemblies of such equipment when sold with or without prime movers, storage tanks, controls, etc.; internal combustion engines; power transmission equipment; pumps; textile machinery, except textile machinery accessories and parts; floor surfacing and floor maintenance machinery and equipment; petroleum industry drilling and producing machinery and equipment; printing trades machinery and equipment are defined in MPR-136; bookkeepers machinery, supplies and equipment; poultry farm equipment. (SO-129; OPA-T-4799)

Metal Stampings: The 19 per cent increase in manufacturers' ceiling prices for metal stampings may be passed on by resellers. (MPR-136; OPA-T-4753)

Convector Radiators: Prices for convector radiators advanced 10 per cent over March, 1942, prices, effective July 26. (MPR-591; OPA-T-4795)

Oil Burners: Prices for domestic oil burners advanced 5.5 per cent, effective July 26. (MPR-591; OPA-T-4798)

Transformers: Sales and deliveries of distribution transformers may be made subject to agreement with the purchaser that, if prices are later increased, the seller may collect the difference between the present ceiling and the revised price. (MPR-136; OPA-T-4769)

Transformers and Motors: Resellers of specialty transformers and integral and fractional electric motors may pass on the percentage amount of any individual increase in their suppliers' prices. (SO-142; OPA-T-4764)

Consumer Items: Manufacturers of the following items may apply for increased prices on goods in their lowest price lines: Razor blades, standard Stillson pipe wrenches, illuminating glassware, and mechanical pencils. (SO-148; OPA-T-4763)

Screen Goods: Manufacturers of stock screen goods may apply for individual adjustment of their prices where they can show that existing ceilings result in hardship under previously announced provisions, effective July 26. (MPR-381; OPA-T-4748)

Pig Iron: Maximum pig iron prices increased $2 per gross ton as of July 27. The increase may be charged in accordance with adjustable pricing which was in effect since May 29. With issuance of the price increase amendment, the adjustable pricing order is revoked. (MPR-10; OPA-T-4807)

Ammonium Sulphate: Producers' maximum prices of ammonium sulphate have been increased an average of about 10 per cent in all but 11 western states to the basis of $30 per ton, bulk, fob point of production. (MPR 205; OPA-T-4803)

Wire and Cable: Manufacturers of wire and cable, except armored cable, may revise their lists as of July 27 so as to include no more than the amounts permitted by the increases granted June 3 and June 4, 1946. Resellers who customarily sold off the manufacturers' list may continue to do so, since a percentage pass on for all resellers is now provided. The requirement has been revoked that manufacturers of wire and cable supply resellers with separate statements on invoices showing the amounts of their price increases. Manufacturers of wire and cable containing copper shields have been granted a 1.10 per cent increase factor. (MPR-82; OPA-T-4816)

Bearings: Manufacturers' maximum prices increased over base date sales prices 10.5 per cent for metal balls and 12 per cent for those antifriction bearings covered by MPR-136. Automotive bearings are excluded from this action. Resellers of the products covered may increase their sales prices the same percentage amounts as their invoiced net costs have been increased. (MPR-136; OPA-T-4820)

Wheeled Goods and Furniture: Comparatively high, "new, small manufacturer" prices previously authorized for baby carriages, velocipedes, scooters and other wheeled goods and for household furniture and furniture parts have been revoked. Ceilings in line with prices quoted by old line firms will be substituted. (MPR-188; OPA-6625)

Automobiles: Ceilings on new cars have been restored to June 30 levels until adjustments are made in conformance with provisions of the Price Control Extension Act, eliminating absorption of price increases by dealers. (OPA-6638)

Bottling Machinery: Manufacturers of beverage and bottle machinery granted a 15.5 per cent interim price increase, effective July 27. (MPR-205; OPA-T-4803)

Generator Sets: Prices of electric motor, engine-driven and turbine-driven generator sets have been increased 16 per cent to 27 per cent effective July 27. (MPR-136; OPA-T-4806)

CIVILIAN PRODUCTION ADMINISTRATION

Surplus Property: Urgency certificates no longer valid against government-owned surplus property which the War Assets Administration has advertised for sale. (PR-13; CPA-490)

Bale Tie Wire: Period during which the War Assets Administration is required to channel government surplus of bale tie wire to producers of bale ties has been extended for another 60 days, or to Sept. 30. (PR-13; CPA-LD-173)

Housing: Following special assistance is now available for the reuse housing program: A "certified-HH" rating for cast iron soil pipe and fittings, gypsum board and building board which is extendable to suppliers and producers and which has a higher priority than an uncertified HH rating or a CC rating but is lower than ratings of AAA or MM, a new "HHH-rating" which is superior to HH and CC ratings; an "authorized order" directed at "earmarked products." (PR-33, L-357; OPA-498)

Unions Seeking To Hold Wage Gains

Immediate demands for pay boost believed dropped by CIO as union strategists map plans to maintain buying power of dollar

CLEVELAND

CONFUSED by recent developments on the economic front, leaders of organized labor are feverishly laying the groundwork for action aimed at holding the wage advantages won earlier this year through strikes and work stoppages. However, it seemed clear last week that whatever program finally emerges from the various strategy meetings being held, the unions are likely to move slowly in aggressively putting forth new wage demands to offset rising living costs.

This, at least, appeared to be the view of most observers based on a report from Detroit that the CIO and its member union, the United Automobile Workers, had abandoned, for the present at least, any thought of demanding new wage increases but, rather, planned to concentrate efforts on a drive to preserve the purchasing power of the dollar.

As reported in authoritative circles, UAW leaders have decided that to make fresh wage demands now might only further aggravate the inflationary spiral, even though it is felt the wage increase of 18½ cents per hour won last spring has just about been wiped out through price increases.

Adoption of a definite policy is expected at a strategy meeting of the international executive board of the UAW called for Aug. 5.

While threat of demands for immediate wage increases is believed waning, such threat exists for the long term with unions laying plans for wage negotiations next spring when many existing contracts expire. At Cleveland last week the groundwork for future wage negotiations was laid by groups of the two most powerful CIO unions, the United Steelworkers of America and the United Automobile Workers.

The 300-delegates present at the Steelworkers meeting adopted five resolutions of local origin and pledged support to three others adopted at the USA convention in Atlantic City last month. Among the resolutions was one calling on the OPA to hold the price line and urged union members to resist price advances by buyers' strikes.

Co-incident with the meeting of the Steelworkers union, delegates representing over 100,000 members of the United Automobile Workers union met at Cleveland also and perfected plans for a new national organization which will work for uniform contracts and organized shops in the truck, trailer, bus and trackless trolley industry.

Price control and the new OPA legislation, wage stabilization, collective bargaining procedures and labor-management relations were among major topics of discussion at the annual meeting of the Ohio State Federation of Labor also held in Cleveland last week. Keynote address of the meeting was by William Green, president of the American Federation of Labor, in which he characterized the present Congress as "the most reactionary in the history of the United States," charging that some members of Congress "succumbed to high-pressure lobbies and surrendered to special interests."

Green did not limit his attack to Congress, however, extending his remarks to take a slap at the CIO, stating the AFL would not collaborate or fraternize with the CIO which he described as being "dominated by those who take their orders from a foreign country."

PICKETS PARADE: Pickets marched in front of Milwaukee Gas Co. tanks, Milwaukee, after CIO union employees of the company went on strike. Only 39 of the 500 workers reported to their jobs. NEA photo

Guaranteed Wage Provided In Beryllium Agreement

Agreement between the United Steelworkers of America (CIO) and the Beryllium Corp. of Pennsylvania, Reading, Pa., providing for wage increases, and provision for guaranteed annual wage, was announced last week by the Steelworkers' union in its organ *Steel Labor*.

In section 10 of the contract it is stated that: 'The corporation guarantees to every employee, who has completed five years continuous service . . . 2080 hours for each yearly period beginning May 1, 1946, and continuing each year thereafter during the life of this contract.

"All hours worked by said employee, both straight time and overtime, shall be credited against the 2080 hours. If the corporation does not provide work for any part of the 2080 hours the employee shall be paid for the unworked hours at his straight time hourly rate."

Pressure Eases For Some Types Of Machinery

Demand for machine tools tapers due to combination of factors. Special purpose orders holding up well

CLEVELAND

DEMAND for certain types of machine tools, including automatic screw machines, has tapered off rapidly during the last few weeks. This is attributed to seasonal factors, general industrial uncertainty generated by recent price control developments, and to the increase in the number of companies which have decided to delay the introduction of new models until at least 1947.

Current orders for other types of machinery, however, are being received in good volume. Interest in diecasting machinery, for instance, has rebounded rapidly from the wartime low and promises to remain at a high level throughout the year.

Contacts with foreign buyers have been resumed and a fair amount of business is being transacted, chiefly in the special purpose machine class. The British and French are now expected to confine their American purchases to this type of machine tool since they are anxious to maintain activity in their own war-expanded industries at as high a rate as possible and to conserve their foreign exchange for purchase of other products.

It has also been found that the large surpluses of machine tools in some foreign countries, such as Japan, will be sufficient to take care of the countries in which they are located, as well as in neighboring countries, for a long time to come.

Demand from Russia has not materialized in the previously expected volume, due in part to the tense political situation that has prevailed since V-J Day and in part to the large volume of used machines which has been brought in from occupied territories.

Automotive Tooling Programs Yet To Reach Buying Stage

Detroit—New automotive tooling programs have yet to reach the buying stage, except for the Ford and Chevrolet light-car projects, with the result the larger die shops are operating at a slow pace and equipment buying is restricted.

Smaller tool and die shops likewise are not too busy, and several are either contemplating selling out, or already have done so. An exception is the flurry of activity in production of bumper dies to meet the critical shortage of these components. A new and as yet unidentified division of General Motors is inquiring for substantial quantities of machines and equipment.

Considerably improved order and efficiency is marking disposal of WAA surplus machinery compared to a few weeks ago.

Rearrangement of equipment and installation of new tools is proceeding at the Detroit Tank Arsenal, now operated on a permanent basis by the Ordnance Department and pointed toward the continuing development of improved designs and manufacturing processes for tanks and mobile artillery.

Tools and Equipment Included In Illinois Surplus Sale

Chicago—The Illiopolis Engineer Redistribution Center and Sangamon Ordnance Plant, Illiopolis, Ill., was opened Aug. 1 by War Assets Administration for a continuous sale of some 7000 kinds of war surplus property valued at approximately $13,000,000. Prominent among the items offered are machine tools, electrical and construction equipment, road machinery, industrial machines and automotive maintenance equipment. Federal agencies have first opportunity to buy the surplus, followed by World War II veterans, small businessmen, and state and municipal governments.

Belgian Machinery Exports Show Gain Since January

Washington — Belgian machinery imports totaled 201,788,000 francs in January, 1946. Machinery exports of 108,131,000 francs were reported for January and 111,363,000 francs in February. March exports reached 127,710,000 francs.

Slight Dents Being Made in Order Backlogs at Cincinnati

Cincinnati — Machine tool manufacturers in this district are making only slight dents in backlogs. Shortages in materials and equipment continue to present handicaps to production.

Settlement of the price control questions should soon result in an upturn in buying interest, according to general opinion.

Present, Past and Pending

■ GEAR SALES INCREASE 2.6 PER CENT IN JUNE

PITTSBURGH—Gear sales, excluding turbine and propulsion gearing, increased 2.6 per cent in June over the previous month, American Gear Manufacturers Association reported last week.

■ FIRST OF NAVY, MARITIME SHIPS READY TO BE SCRAPPED

WASHINGTON—About 280 Navy and Maritime Commission ships have been made available for scrapping, the first of a total of 1280 ships to be broken up. The first allotment will produce about 700,000 tons of iron and steel scrap.

■ ELECTRIC GENERATING CAPACITY MAY RISE 30% BY 1950

PITTSBURGH—Current unprecedented expansion of the electric power industry points toward a 30 per cent increase in capacity for generating electricity by 1950.

■ MORE ITEMS TO BE PLACED UNDER EXPORT LICENSE CONTROL

WASHINGTON—No general order is contemplated to limit sales of general items for export, but Civilian Production Administration officials said last week that probably several commodities now in short supply will be added to the list of materials subject to export license control.

■ COANE, FORMER AJAX METAL CO. OFFICIAL, DIES

PHILADELPHIA—William J. Coane, 78, retired vice president and general sales manager, Ajax Metal Co., died here July 31, following a long illness. He had been active in foundry and metal industries for 60 years.

■ ANTIFRICTION BEARING MAKERS CITED IN CLEVELAND

CLEVELAND—Three civil actions were filed here last week charging three American firms and one foreign concern with cartel agreements to control world-wide antifriction bearing markets. Firms named included: Timken Roller Bearing Co., Canton, O.; SKF Industries Inc., Philadelphia; Aktiebolaget Svenska Kuliagerfabriken, Gothenburg, Sweden; and Norma-Hoffmann Bearings Corp., Stamford, Conn.

■ NEW USERS FOUND FOR HIGHLY POLISHED STEEL TUBING

BEAVER FALLS, PA.—Highly polished seamless carbon steel tubing produced by Babcock & Wilcox Tube Co., used during the war almost exclusively in the oil industry, is finding new users in agricultural implement manufacturers, pump makers and machine tool builders.

Steel Earnings Drop in First Half

NET PROFIT in the steel industry during the first half of 1946 declined about 4 per cent from that in the corresponding period of last year, but the drop would have been much sharper had a number of companies not transferred substantial amounts from contingency reserves to income in 1946.

While net income in the second quarter of 1946 was considerably better than that of the second quarter of 1945 the income in first quarter of 1946 was so low as a result of the steel strike that the first half earnings in 1946 fell below those of the first half of 1945.

For the first half of 1946, 15 steel ingot producers representing 80 per cent of the nation's ingot capacity showed a net income of $80,417,206 compared with $84,928,815 in the first half of last year. Their net income in the second quarter of 1946 aggregated $58,351,372, compared with $22,065,833 in the first quarter of 1946 and $44,210,648 in the second quarter of 1945.

Showing for both the first and second quarters of 1946 would have been lower had substantial amounts not been transferred from contingency reserves to income, for some producers actually had operating losses. Such transfers are exempt from income taxes, inasmuch as they were taxed before being set aside in contingency funds, and consequently tax items on reports on some companies which made transfers appear small for the amount shown as net income.

Net earnings of each of the 15 steel

Decline would have been even sharper had some companies not transferred substantial amounts from contingency reserves to income

producers were considerably higher in the second quarter of this year than in the first quarter. Three of these 15 producers reported net losses in the first quarter but all 15 showed net profits in the second quarter. In the second quarter of 1945 all 15 companies had net profits. For the first half of 1946 one of the 15 companies showed a net loss, but in the first half of 1945 all of them had net profits.

Republic Steel Corp.

Republic Steel Corp., Cleveland, reported its net income for the second quarter of 1946 was $4,802,756, an increase over the $3,271,703 in the corresponding quarter of the last year.

For the first quarter of 1946 the company showed a net loss of $347,413. Consequently, net earnings for the first half of 1946 totaled $4,455,343, compared with $6,356,251 in the corresponding period of 1945.

Youngstown Sheet & Tube

Net profits of the Youngstown Sheet & Tube Co., Youngstown, for the second quarter and the first half of 1946 rose above those for the corresponding periods of 1945.

Second quarter net profit in 1946 totaled $3,099,099, compared with $2,119,398 in the like period of last year, and first half net profit in 1946 aggregated $4,304,543, compared with $4,007,947 in the first half of 1945.

National Steel Corp.

National Steel Corp., Pittsburgh, had a net income of $7,686,344 in the first half of 1946, compared with $6,883,171 in the corresponding period of 1945.

Net earnings in the second quarter of 1946 were $5,602,988, compared with $2,083,356 in the first quarter of 1946 and $3,453,183 in the second quarter of 1945. All expenses resulting from the coal strike were charged against cost of operations in the second quarter of 1946.

Sloss-Sheffield

Net profit reported by Sloss-Sheffield Steel & Iron Co., Birmingham, for the first half of 1946 is $27,837, compared with $267,129 for the corresponding period of 1945.

Allegheny Ludlum Steel

Increases in net income are shown by Allegheny Ludlum Steel Corp., Bracken-

Summary of Net Income of Steel Producers

	Second Qtr. 1946	First Qtr. 1946	Second Qtr. 1945	First Half 1946	First Half 1945
United States Steel Co.	$13,900,270	$10,238,271	$16,774,202	$24,138 541	$32,153,373
Bethlehem Steel Co.	14,447,207	4,804,438	8,041,682	19.251,645	15,737,591
Republic Steel Corp.	4,802,756	347,413*	3,271,703	4,455,343	6,356,251
Jones & Laughlin Steel Corp.	2,343,298	813,246	2,357,524	3,156,544	4,371,013
Youngstown Sheet & Tube Co.	3,099,099	1,205,444	2,119,398	4,304 543	4,007,947
American Rolling Mill Co.	5,218.129	1,804,487	2,071.925	7,022,616	3,947,428
National Steel Corp.	5.602.988	2,083,356	3,453,183	7,686,344	6,883,171
Allegheny Ludlum Steel Corp.	2,194,085	252,043	1,027,097	2,446,128	1,963,787
Keystone Steel & Wire Co.	758,581	528,901	464,263	1,287,482	800,755
Continental Steel Corp.	380,152	10,961	208,672	391,114	360,564
Alan Wood Steel Co.	130.047	263,422*	74,958	133,375*	66,065
Copperweld Steel Co.	239,061	188,521*	222,328	50,540	475,959
Rotary Electric Steel Co.	229,091	54,429	150,351	283,520	258,720
Inland Steel Co.	3,926,342	1,046,958	2,841,652	4,973,300	5,212,600
Wheeling Steel Corp.	1,080,266	22,655	1,131,710	1,102,921	2,333,591
Totals	$58,351,372	$22,065,833	$44,210,648	$80,417,206	$84,928,815
Finishing Capacity Only:					
Acme Steel Co.	$1,029,665	$679,329	$600,520	$1,708,994	$1,113,871
Superior Steel Corp.	473,300	36,678*	92,515	436,622	159,839
Pig Iron Capacity Only:					
Woodward Iron Co.	$94,957	$381,848	$107,302	$476,805	$394,629
Sloss-Sheffield Steel & Iron Co.	23,002*	50,839	74,426	27,837	267,129

*Loss.

ridge, Pa., for the second quarter and the first half of 1946.

Net income for the second quarter of 1946 was $2,194,085, compared with $252,043 in the first quarter of 1946 and $1,027,097 in the second quarter of 1945.

American Rolling Mill

Second quarter net earnings of American Rolling Mill Co., Middletown, O., this year were $5,218,129, compared with $2,071,925 for the second quarter of 1945.

Inland Steel Co.

Income report of Inland Steel Co., Chicago, shows that net earnings for the second quarter of 1946 were $3,926,342, compared with $2,841,652 in the second quarter of 1945.

For the first half of 1946, net earnings were $4,973,300.

Chief Production at Geneva Will Be Plates and Shapes, Says Olds

OPERATIONS are getting under way at the Geneva, Utah, plant, recently acquired from the government, three out of nine open-hearths starting up late in July, with finishing operations expected to begin this month, Irving S. Olds, chairman, United States Steel Corp., declared at a press conference following the regular quarterly meeting of directors last week.

Because of the layout of present facilities, finished steel production will be principally in plates, with some shapes, but he did not anticipate any capacity production in plates at any time. Geneva's annual plate capacity is more than 700,000 tons, more than the capacity of the entire plate industry prior to the war. Even a few months of full operations under present peacetime conditions did not seem probable to him, he added.

Earnings of U. S. Steel for second quarter were reported at $13,900,270, but income for the period would have amounted to only $2,133,479 had there not been created during the war years a fund to cover abnormal costs against which various charges were made. These included cost of the two-months coal strike of $18,148,917 without any consideration of loss in income due to lessened steel product sales.

Reported income for second quarter does not reflect any part of the strike costs. After reduction for associated federal income taxes, the net amount of these strikes and other costs chargeable to the fund covering abnormal costs arising from the war was $11,266,791.

Unfilled orders at the end of the second quarter were about the same as at the end of the preceding quarter.

The railroad car situation, as it affects the Steel corporation, has improved some, but is still tight, he said. Scrap also is critical. It is too early after the revival of OPA to look for any important changes in finished steel prices, but, he thought, when changes did begin to appear they would be on a product, rather than industry-wide basis. There are various products which provide little or no profit to the producer, he indicated.

Cox Named President of Carnegie-Illinois

CHARLES R. COX

J. LESTER PERRY

Charles R. Cox became president of Carnegie-Illinois Steel Corp., Pittsburgh, Aug. 1, succeeding **J. Lester Perry** who retired to become assistant to the president, United States Steel Corp. of Delaware.

Mr. Cox had been president of National Tube Co., Pittsburgh, another U. S. Steel subsidiary, since March, 1943. Joining the National Tube Co. as general superintendent, Ellwood Works, in 1934, he was made vice president in charge of operations in 1936, became executive vice president in 1941, and president in 1943.

Mr. Perry started in business as a cost clerk in the Worcester, Mass., operations of American Steel & Wire Co., Cleveland, in 1899, two years before United States Steel Corp. was formed.

He was appointed vice president of the company in charge of operations in 1913, with headquarters in Cleveland and two years later was elevated to the presidency of Tennessee Coal, Iron & Railroad Co. at Birmingham, another U. S. Steel subsidiary. In January, 1938, he became president of Carnegie-Illinois Steel Corp.

Succeeding Mr. Cox as president of National Tube Co. is **John E. Goble** who has served the company since 1936 as vice president in charge of sales. He has been with United States Steel and companies affiliated with U. S. Steel for the last 21 years.

At the same time **William F. McConnor** has been named to succeed Mr. Goble as vice president in charge of sales of National Tube. He has been general manager of sales of the company since 1936.

Big Car Building Program Planned; Shortage Acute

ACUTE shortage of railroad rolling stock, especially box cars, is hampering the prompt movement of steel and many other critically needed raw materials in short supply.

Government agencies are moving to effect some relief in the railroad equipment situation but such relief cannot be expected for months. Currently the government is planning to finance and provide materials for construction of 50,000 box cars.

Explaining the plan the ODT states the railroads have ordered only 57,693 freight cars to be built this year while the government agency feels at least 80,000 cars are needed to meet the immediate demand during 1946 and to provide for replacement of equipment heavily over-used during the war. Total car building capacity is estimated at 12,000 to 14,000 monthly.

Specifications for the projected cars would call for 900,000 to 1 million tons of steel.

Bethlehem Plans Big Expansion

Chairman Grace announces additional Sparrows Point facilities projected in pig iron, coke and steelmaking capacity

By B. K. Price
Eastern Editor, STEEL

Aerial view of the Sparrows Point, Md., plant of the Bethlehem Steel Co. where a $190 million plant expansion program has been projected including steelmaking and finishing facilities

FURTHER heavy expansion at Sparrows Point, Md., this time in pig iron, coke and steelmaking capacity, has been authorized by the Bethlehem Steel Co. Work will include a blast furnace, a battery of coke ovens and facilities for producing between 45,000 and 50,000 tons of steel monthly, both open hearth and bessemer.

This program will support the new flat rolled capacity now under construction. Completion of the new work will require a number of months, although it is impossible to say, in view of present unsettled conditions, just when the new facilities will be ready for operation, Chairman Eugene G. Grace announced. The new blast furnace will have a capacity of approximately 36,000 tons monthly.

Finished steel expansion at Sparrows Point, as reported in previous issues, includes a 66-inch continuous sheet and strip mill, which is now being installed to supplement the present 56-inch sheet and strip mill, and which will double the capacity of the plant for production of hot-rolled sheets and strip. Also under way, with work having started last summer, is a 56-inch cold-reducing sheet and tin plate mill that will supplement two existing 42-inch cold reducing mills. Wire mill facilities at Sparrows Point also are being expanded and modernized with new wire drawing machinery and annealing equipment. In addition, a substantial expansion of the rod mills and an increase of 50 per cent in the capacity of the butt-weld pipe mill are under consideration.

Indications are the new work will cost between $25 million and $30 million bringing total authorizations for new expansion, as of July 1, up to $190 million, as compared with $135 million at the beginning of the second quarter.

Commenting upon the $55 million increase, Mr. Grace, speaking at his press conference which followed the last quarterly directors' meeting, asserted that about half was due to increases in costs on work already authorized. He said the company found costs on projected work were exceeding appropriations, and that it was necessary to re-estimate costs, which, it developed, were 25 per cent higher than originally estimated. The remainder of the $55 million increase over authorizations made three months previously was for the new work at Sparrows Point, Md. Mr. Grace estimated that completition of the $190 million program now authorized would probably require two to three years.

Second Quarter Earnings Up

Although Bethlehem's second quarter operations were affected by the coal strike its earnings that period were considerably better than in the first quarter when the steel strike cut production back heavily. Net income for the second quarter was $14,447,207, whereas in the first quarter it was only $4,804,438. In fact, a loss would have been shown for the first quarter had not $11 million been transferred to income from a contingent reserve which had been set up out of income in prior years. Net income for the second quarter of 1945 was $8,041,-682. For the first half of 1946 net earnings totaled $19,251,645, compared with $15,737,591 in the first half of 1945.

Orders on hand at the end of the last quarter amounted to approximately $469 million, actually about $1 million more than at the beginning of the year, notwithstanding the completion of some important ship contracts. In other words, demand for steel was "up a bit," Mr. Grace said. However, orders on hand at the end of the second quarter were down from $512 million at the close of the first quarter. Tonnage of steel orders on hand June 30 was 4,966,000, against 4,910,000 at the end of the first quarter, an increase despite the fact that Bethlehem has not as yet opened books for next year.

Commenting upon the improved financial showing for second quarter, Mr. Grace explained it was due largely to the closing up of certain large contractural obligations, notably in ships, and a favorable tax situation for that period.

While much ship construction work has been cleaned up, there is still a good amount of shipyard activity, Mr. Grace declared, principally ship conversion and repairs. Actually, he said, Bethlehem's yards with 43,000 men, are employing only 2000 less than at the end of the first quarter.

Mr. Grace contemplates no general rise in steel prices at present. "We must first get our bearings under the revived OPA," he said. "We probably should have at least another couple of months of representative operations." He said there are certain "depressed items," such as nails, bale ties and galvanized sheets, which stand badly in need of price adjustment and which may come up for consideration soon; and pig iron may come up for early action, he indicated, but it is too early to talk of any general revisions.

He did not look for any expansion in rationing of steel, and thought that probably by at least the end of the year the industry would see the end of such rationing (referring principally to present directives for the housing and agricultural industries), and even if extended beyond, he thought it would be of relatively little importance.

Manufacturing Revival Threatened Unless Acute Copper Shortage Is Quickly Relieved

ACUTE shortage of copper is retarding the hoped-for reconversion of the automotive, electrical and housing industries and this untoward delay in production is accelerating inflation, C. Donald Dallas, president, Revere Copper & Brass Inc., New York, warned last week.

"Soon our customers in many industries will be forced to curtail production at a time when more production is desperately needed to check inflation as well as to meet consumer needs that have piled up since 1941," Mr. Dallas said. "Some companies are already advising the public of curtailment of operations as a result of this condition.

"Productive capacity of the copper industry in the United States at the present level of prices is about 65,000 tons a month whereas copper consumption currently requires about 120,000 tons a month of the red metal. The 5 months' strike in the copper industry has already created a serious shortage which is pinching production everywhere.

"There is only one source from which this crisis in the copper industry can be relieved and that is the Metal Reserve Corp. It can make additional purchases from foreign sources and it can make available Metal Reserve stocks of approximately 300,000 tons of copper held in this country for conversion into shapes that can be used by such fabricators as Revere.

"However, the Office of Price Administration ceilings for conversion of copper cathodes—the bulk of imported copper is in this form—into usable shapes is less than the cost of such conversion, and this unhappy price factor is preventing the conversion and use of this urgently needed copper.

"Moreover, it seems improbable that the Metal Reserve Corp. can purchase any further foreign copper now that can be delivered in this country before the last quarter of this year and then only at prices higher than are presently existing in this country.

"Despite popular theories of some years ago, it is currently estimated that at the present rate of consumption there is only about a 15-year reserve of copper in this country. Thus, both the short range and long range situations are very critical."

Tin Output To Remain Under Prewar Level Until 1949

World tin production will not attain prewar levels until some time in 1949, John J. Croston, special investigator for the Civilian Production Administration, reported last week following an on-the-spot survey of Far Eastern conditions.

Only about 41,000 tons of tin are located in the Orient, which is normally the source of 70 per cent of the world's tin supply, he said. This supply is about three months' world consumption at the present rate.

The poor condition of the Far Eastern tin mines will limit production to about 24,000 tons in 1946 compared with a peacetime output in the Orient of over 160,000 per year, Mr. Croston said.

Production of Foundry and Malleable Iron Declines

Production of foundry and malleable iron during the first six months of this year averaged 360,000 net tons per month, the Civilian Production Administration reported recently, compared with 386,000 tons per month in the like 1945 period. This loss of 156,000 tons for the period resulted from the shortages of pig and scrap iron.

Members of the Malleable Iron Industry Advisory Committee have recommended to CPA that foundry pig iron controls (under direction 13 to M-21) be dropped on Sept. 30 as it is felt that the shortage will then be over.

Small Says Scrap Shortage Threatens Steel Output

Civilian Production Administrator John D. Small last week addressed an appeal to industry to immediately institute a survey of all properties for sources of scrap and to arrange to immediately collect and move material into supply lines.

Administrator Small, pointing out that some open-hearth furnaces are being taken off because of lack of iron and steel scrap, says utmost co-operation is needed if further interruption of steel production is to averted.

Pig Iron Production Scores Gain in June

PIG IRON production in the United States in June totaled 3,682,273 net tons, compared with 2,274,545 tons in May, an increase of 1,407,728 tons, percentage of capacity engaged in June being 66.5, against 39.8 per cent in May.

In June, 1945, output was 4,605,012 tons, at 83.1 per cent of capacity.

Of these totals ferromanganese and spiegeleisen represented 45,239 tons in June, 30,265 tons in May and 60,622 tons in June, 1945.

Cumulative tonnage for six months this year was 17,806,821 tons at 53.3 per cent of capacity, compared with 29,142,283 tons, at 87.3 per cent of capacity in first half of 1945, a decline of 11,335,462 tons.

Ferromanganese and spiegeleisen in first half this year totaled 186,241 tons against 396,858 tons in the comparable period last year.

Blast Furnace Capacity and Production—Net Tons — **JUNE - 1946**

	Number of companies	Annual blast furnace capacity	Production							
			Pig Iron		Ferro manganese and spiegel		Total		Percent of capacity	
			Current month	Year to date	Current Month	Year to date	Current month	Year to date	Current month	Year to date
Distribution by Districts										
Eastern	12	12,988,970	700,228	3,258,693	24,004	89,446	724,232	3,348,139	67.8	52.0
Pittsburgh-Youngstown	15	25,939,940	1,352,996	6,681,005	12,231	49,708	1,365,227	6,730,713	64.0	52.3
Cleveland-Detroit	7	6,557,500	414,886	2,044,268	-	-	414,886	2,044,268	76.9	62.8
Chicago	7	14,093,510	795,022	3,809,111	-	-	795,022	3,809,111	68.6	54.5
Southern	9	4,924,670	269,094	1,318,324	9,004	47,087	278,098	1,365,411	68.6	55.9
Western	5	2,836,000	104,808	* 509,179	-	-	104,808	* 509,179	44.9	36.2
Total	36	67,340,590	3,637,034	17,620,580	45,239	186,241	3,682,273	17,806,821	66.5	53.3

* Adjusted

Windows of Washington

Majority of long-established federal agencies reported to function smoothly but confusion in newly organized bureaus brings on criticism of all government offices. Devotion of government employees to jobs cited

MANY BUSINESSMEN who have visited Washington during recent years have returned to their homes with tales of appalling inefficiency they found in various government offices. This impression in large measure has been justified, particularly because the majority of these visitors have had their contacts with newer agencies created to deal with emergency situations.

Many of the emergency agencies have been horrible examples due to being set up overnight to assume duties for which there had been little or no precedent. They have been plagued with difficulties of obtaining adequate personnel, adequate quarters and facilities, and lack of capable administrators and supervisors. They have had to start from scratch and set up their organizations and procedure as they went along.

During the old NRA days a comment by a typical businessman was that his time had been spent ineffectually and that he would have gotten the same results had he just stayed down at the Union Station until time to board his train for home. Similar troubles were encountered in dealing with many of the new agencies set up to handle special chores in World War II.

In addition to inefficiency in new agencies during their organizational period, a good deal of lost motion is found in the older, established agencies at times. This condition is encountered during periods of change which generate uncertainty. Good examples at the moment are the Commerce Department which is under the necessity of toning down a good many activities because of reduced Congressional appropriations; the State Department which every day encounters new twists in the field of international relations; the Bureau of Labor Statistics where the CIO now finally has gained the upper hand so that the staff does not know what sort of shakedown lies ahead; the OPA which stood by until it got a new grant of authority.

But the great majority of government agencies function smoothly and efficiently. Once they get organized and adequately staffed and each employee equipped with a proper understanding of his or her duties, the grounds for complaint usually vanish. As a matter of fact, efficiency in government offices seems to most fair-minded Washington observers to be on a par with that in private business.

What most visitors fail to realize is that there is no sharp gap between people in government employ and people in private employ. The great majority of men in supervisory, administrative and technical positions with the government have come from private industry, and all the time there is a steady stream of people leaving the government for jobs in private industry—and usually at higher pay.

The way the system works can be illustrated by citing the wartime War Production Board. Key industry people were pulled in from all directions to do an almost impossible job. They made some mistakes but in pushing production to the highest level ever known in the history of the world made what many authorities have acclaimed as the greatest single contribution to the winning of the war.

Perhaps it is not generally understood that these people, once their war production jobs were done, did not all go home. A great many of them have remained in Washington where they are doing efficient work in one government agency or another. Quite a few of them, incidentally, are rendering vital services in helping direct the government program for disposal of surplus property. For example, W. A. Hauck is performing yeoman services in helping to bring to solution the difficult problem of peacetime utilization of the steelmaking facilities built at government expense during the war emergency.

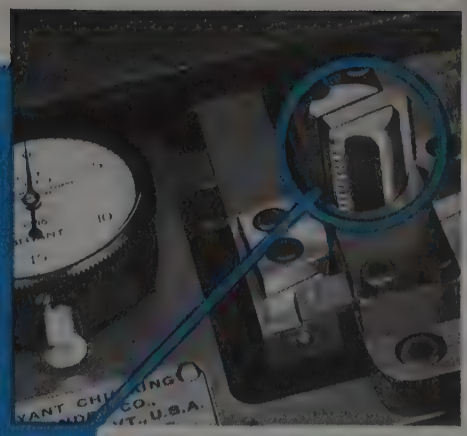
NEW ADMINISTRATOR: Maj. Gen. R. M. Littlejohn, right, who directed the supply of more than 70,000 items of food, clothing and equipment for more than three million soldiers, was sworn in as War Assets Administrator by Maj. Gen. Edward F. Witsell. General Littlejohn succeeds Lt. Gen. Edmund B. Gregory, who retired because of ill health. NEA photo

Charge of "Shirker" Disproved

Usually the criticisms of inefficiency are received by government employees with a sense of humor but when the gibe is unusually blunt it is apt to get under their skin. This happened recently when Rep. Earl Wilson (Rep., Ind.) applied the epithet "shirker" to government workers in general. It resulted in a contest conducted by Jerry Kluttz, *Washington Post* columnist, which proved that there are large numbers of government employees who definitely are not "clock-watchers."

Some of the oustanding contestants are well known to many readers of STEEL. The winner was Ernest C. Morris of the technical staff of the Office of the Chief of Ordnance. In his 48 years with the government Mr. Morris forfeited 556 days of leave to which he was entitled under the law; he contributed this time

Quality Control made simple ...by the use of BRYANT THREAD GAGES



Internal

External

Quality control — essential to mass production of threaded parts — often slows assembly lines, when time-consuming, conventional gaging methods are used. Yet, inspection can be simple, accurate to any desired tolerance, and extremely fast if you use Bryant Thread Gages. They are easily operated at top speed by anyone. The operator need only squeeze the control lever, drop the part onto the work holder, release the lever. An immediate engagement is made on all the threads. He gives the work a partial turn and the thread is inspected all over. The dial indicator shows the overall accuracy within required tolerances, or accumulated inaccuracies of lead, pitch, diameter and thread form or the presence of burrs. And no "feel for fit" is required and these gages are four-to-five times faster than ring and plug gages.

Do you value quality control in your plant? Then send us part prints covering your problems — our engineers will be glad to advise you. Send the coupon below for Illustrated Catalog G-3.

New Portable

Thread Gages, also Squareness of Face Gages, Universal Diameter Size Gages.

Please send me Catalog No. G3 which gives complete details on the Bryant Thread Gages.

Name_____ Title_____

Company_____

Street_____

City_____ State_____

BRYANT

BRYANT CHUCKING GRINDER CO. SPRINGFIELD, VERMONT, U. S. A.

to the government without any extra compensation.

Many readers of STEEL also are acquainted with these runners-up: Emil G. Kaiser, machine shop superintendent at the Naval Research Laboratory, who never took a minute's sick leave in the 40 years he has rounded out; Eugene J. Collins, chief of the Structural Section, Navy Bureau of Yards and Docks, who took one day off during all his 40 years with the Navy; and Eugene P. O'Daniel, retiring chief of the Investments Section, Treasury Department, who forfeited 388 days and five hours of legal leave and, besides, contributed thousands of hours of overtime work without pay, during his service of 45 years.

Predictions Prove Unreliable

Predicting the future is an activity shunned by the majority of Washington correspondents. They would rather stick to reporting the facts. Predicting is hazardous; so many viewpoints and influences enter into the formulation of most governmental decisions that the results frequently are surprising—not to say illogical.

That does not keep a fair percentage of correspondents from engaging in the prediction business. They seem to minimize the hazard of wrong guessing by boasting loudly when they have guessed correctly, and relying on the notoriously short memory of the public when they make mistakes.

But their mistakes appear to outnumber their bullseye shots. A private firm that keeps track of such matters recently found that about 60 per cent of predictions made by Washington correspondents turn sour in the light of subsequent events.

A good example of the difficulty of predicting congressional action, and the difficulty of rationalizing the action when it finally develops, was afforded recently when the Senate killed President Truman's Reorganization Plan No. 1 which called for permanent continuance in the National Housing Agency of all the housing activities of the federal government.

The knocking out of the President's plan was widely hailed as a victory for the American free enterprise system. As a matter of fact, it was a victory for the private enterprise system as opposed to increased federal control, but nobody who observed what was going on in the Senate just before the vote was taken feels that the Senate as a whole is entitled to any special credit for courage and foresight in this instance. The issue, apparently, was decided on the basis of pure politics—because a large group of senators supported Sen. Robert A. Taft (Rep., O.) in opposing the President's plan. The fact that Senator Taft's position in regard to the President's plan was inconsistent with his support of the Senate-passed Wagner-Ellender-Taft housing bill was ignored entirely.

BUDGET DIRECTOR: James E. Webb, right, Oxford, N. C., who was nominated to head the Bureau of the Budget, is congratulated by O. Max Gardner, resigning undersecretary of the treasury. Mr. Webb is to succeed Harold D. Smith, who resigned to take a high position with the International Bank. NEA photo

Both the President's plan and the W-E-T bill have one main provision in common. This is the permanent consolidation of the housing agencies in the National Housing Agency. Twitted for inconsistency by Senate Majority Leader Alben W. Barkley (Dem., Ky.), Senator Taft said the President had gone too far in bestowing power on the National Housing administrator; he said he feared that the administrator might be too "public-minded"—so that private business "might suffer under his control."

Politics and Lobbies Win

The so-called lobby of the real estate, mortgage banking and builders' groups was given credit for the victory for the private enterprise system in the Senate. But it is a matter for considerable speculation whether the result came from the efforts of these groups or from plain old-fashioned political rivalry. For these same groups have been just as vocal in opposing the W-E-T bill of which Senator Taft is one of the sponsors.

The typical business viewpoint is: The Federal Housing Administration, the Federal Public Housing Authority, and the Home Loan Bank Administration all have been functioning very effectively in rendering necessary government aid and at the same time assisting private enterprise, and are manned by experienced people who have a constructive viewpoint toward private business—so why take a chance on disturbing this fine setup by putting the whole system under some one man who would have the power to upset it?

There has been some speculation whether a desire to placate union labor among his constituents—union opposition caused him to win election in 1944 by the small margin of some 18,000 votes—was at the root of Senator Taft's part in formulating the W-E-T bill which is so ardently supported by the unions.

Maritime Commission Plan For Luxury Ships Revoked

Upon orders from the administration that unessential government expenditures are to be drastically curtailed, the Maritime Commission has abandoned for the present its plans to let contracts (STEEL, p. 51, July 29) for construction of two luxury liners at an estimated cost of $34,800,000.

Reconversion Director John R. Steelman requested the project be postponed for at least a year. The two vessels involved were to operate between this country and South America under lease to a private shipping line at a government deficit of $2,800,000 a year as part of a postwar program for building five large passenger vessels, approved by the late President Roosevelt.

Fundamental Research Program in Metallurgy Being Pushed by Navy

Office of Research & Invention contracts with three universities to carry on thorough-going studies of physical chemistry in steelmaking and development of criteria for selecting steels for specific uses

FURTHER progress has been made by the Navy's Office of Research & Inventions in placing contracts involving important fundamental research work in the field of metallurgy. Latest arrangements effected are with Carnegie Institute of Technology, University of Illinois, and Penn State College.

Drawn up under the direction of Irvin R. Kramer, metallurgist in the ORI's Planning Division, the contract with the Carnegie Institute of Technology, in effect, calls for a thoroughgoing study of the physical chemistry of steelmaking. The goal is to obtain a better understanding of what happens in the different steelmaking processes that has a bearing on the behavior of steel in service. New methods will be employed in this research; for instance, the migration of constituent elements in the charge will be studied by the use of radioactive tracers.

More Criteria To Be Developed

The work to be done by the University of Illinois will aim at the development of more criteria for selecting steels for specific uses. A special feature of the program will be the use of large test specimens, tested under simulated service conditions, so as to determine the effect of mass on behavior. The aim is to permit closer predetermination of service behavior of various types of structural members and machine parts made of steel of different compositions and by different fabricating methods.

The contract awarded to Penn State College calls for a complete survey of the literature in the field of plastic deformation and fracture. The result is to be a book which will summarize all information developed to date under this head.

Two other important research contracts now are in process of negotiation. Under one of them, Stevens Institute of Technology will seek to develop new fundamental information underlying the behavior of metals under an applied stress.

"The Stevens Institute contract," according to Mr. Kramer, "will involve a determination of the coefficients of self-diffusion of atoms under a strain gradient. This information is important in both the theoretical and practical aspects of metallurgy since it will lead to a better understanding of some aspects of heat treatment and plastic deformation. The rate at which atoms migrate under a given strain determines the rate of precipitation and coalescence in cold worked, age hardenable metals. In addition, this information will add to knowledge of the transformation of austenite to pearlite or martensite when strains are present as a result of heat treatment. A knowledge of self-diffusion under conditions imposed by a strain gradient will also aid us in the determination of the relaxation time and energy involved in plastic deformation. This latter is an important parameter affecting the redistribution of stress under an applied load. Another application of this study will be in the field of powder metallurgy where diffusion is so important."

A contract under discussion with the University of California calls for a study of the effect of alloying elements on the plastic properties of aluminum alloys. "The attempt will be to correlate such fundamental parameters as the atomic radii and the atomic numbers of the alloying elements with the plastic behavior of the alloys," Mr. Kramer told STEEL. "The result should be a better understanding of the laws governing solid solutions. The work to be done by the University of California also will be aimed at a better understanding of the causes of temper brittleness."

Wage and Salary Totals Unchanged Since V-J Day

Private wages and salaries have remained at the same total since V-J Day, against a decline of $13 billion in federal military and civilian payrolls, according to the Department of Commerce.

The individual job-holder earned just about the same average weekly wage in the second quarter of 1946 as he did a year ago, it was found.

While there has been a reduction in hours and overtime premium pay, increased wage rates have offset these factors. Also while there were 5 million fewer jobholders in the second quarter, this does not represent that unemployed number that many—numerous former war workers, as well as veterans, have withdrawn from the labor force, and are not seeking jobs, it was pointed out.

Wartime Congestion Gone From National Capital

There is no need for postponing that next trip to Washington insofar as hotel accommodations are concerned. From a wartime average occupancy of 96 to 98 per cent of all hotel accommodations, the occupancy rate now has dropped to 75 per cent and the hotels are hungry for business.

Furthermore, the attempts at drumming up business indicate that the hotel managers expect a continuance of the present easier situation.

Would Change Revenue Code to Spur Export Trade

An amendment to section 119 (c) of the Internal Revenue Code is necessary to carry out the intention of Congress to stimulate export trade with Latin America, according to the House Small Business Committee. Section 109 (Western Hemisphere Trade Corporations Section), says the committee, apparently was intended by Congress to grant certain surtax and excess profits tax exemptions to United States firms selling United States-made goods to countries in the Western Hemisphere; these exemptions were meant for firms selling the bulk of their goods abroad in the Western Hemisphere.

The Treasury Department's interpretation of this section, says the committee, requires that income for these sales be paid over outside of the United States; if the title to the goods passes to the vendee within the United States, the seller cannot claim the exemptions intended by Congress. Because of the technical complications surrounding sales, shipment, insurance, carrier regulations and other factors, as well as the ability of the larger firms to grant credit to Latin American customers, small firms are at a disadvantage in that they usually fail to enjoy these exemptions.

To remove this discrimination, says the committee, Section 119 (c) should be amended to provide that "gains, profits and income of Western Hemisphere trade corporations derived from purchase of personal property within the United States and its sale and export to purchasers whose principal place of business is without the United States, shall be treated as derived from sources without the United States." Such an amendment should apply retroactively to taxable years beginning after Dec. 31, 1941, the committee recommends.

French Seek To Increase Coal Output

Great effort being made to overcome lag in imports. Annual shortage on basis of present supplies estimated at 20 million tons

OFF SECRET LIST: This research helicopter, Cierva Weir-9, which had been on Britain's secret list, is shown in its first public demonstration at Southampton, England. The craft has jet torque reaction and directional control provided by a laterally directed jet squirting sideways at the tail. "Urge" for the jet is supplied by exhaust and the fan used to cool the plane's engine. NEA photo

PARIS

CHIEF concern of French industrialists, especially iron and steelmakers, continues to be the production of coal. Great effort is being made to make up for the insufficiency of imports which reached only 113,413 metric tons during the last week of June. However, between June 29 and July 2, imports from America alone reached 43,085 tons compared with only 8853 tons during the preceding week.

Output of coal and lignite amounted to 995,000 metric tons during the last week of June. It is felt that the statistics issued by the government mines department are usually optimistic and are difficult to compare with the statistics that were issued in 1938. In that year, the tonnages reported referred to clean or screened coal, whereas present day statistics are for coal as it comes out of the mines. However, the output figures are definitely encouraging.

Hydroelectric Output Higher

The hydroelectric output also is increasing, although gradually, due to an improvement of conditions in the Alps and the Massif Central. The improvement in the supply of electric power is bringing about a marked increase in production of nonferrous metals, including electrolytic copper, aluminum, magnesium and ferroalloys.

Imports of coal during the first 25 weeks of the year were as follows in tons from countries of origin: United States 2,255,000, Germany 1,785,000, Great Britain 522,000, Belgium 250,000, Holland 71,000 and Poland 77,000.

The coal conference that was held in Paris at the beginning of July was of great importance to French industrial interests. It is claimed that France needs 20 million tons of coal annually in addition to her normal output, and also in addition to the imports that France can logically expect under present conditions from outside countries. The French representatives at the conference asked for deliveries of 10 million tons from the Ruhr, including coke. The French claim that Germany produces 5 million tons of coal per month, or 25 per cent of the prewar output; the argument goes on to say that if Germany is allowed to keep 50 per cent of her present output France could obtain the tonnage she requires, taking account at the same time of the requirements of other priority countries such as Italy, Holland, Switzerland and Scandinavia.

The result of the conference was unfavorable to France's request, the main opposition coming apparently from Great Britain. The French claim that if they do not receive sufficient coal, there is little point in ordering industrial plant and machine tools from America since they will not be able to use such plant to capacity.

The question of wages continues to be a considerable problem in French industrial developments, and is causing much worry to the present government. Recently a meeting was called between representatives of the trades unions and of the employers, and various subcommittees are investigating what can be done to give the workers a minimum wage commensurate with the increased cost of living. As a starting point the main committee has taken the 25 per cent increase over present nominal wages that had been claimed by the Confederation Generale du Travail, which represents all the leading trades unions. The CGT claims that such an increase can be given without increasing the existing level of prices, thanks to the general upward trend of production which should compensate industry against the higher costs caused by wage increases.

However, this argument is not generally accepted as sound, and it would seem necessary to resort to a moderate increase of prices, coupled with larger government subsidies, to allow industry to absorb the higher wages in their costs, but the government does not appear disposed to adopt this solution and the question is not yet resolved.

In regard to coal, the minister of national economy estimates that an increase of wages of 25 per cent would increase the cost of production by 20 per cent, so it would be necessary either to increase prices or to increase the subsidy. Recent wage increases granted in the gas and electricity undertakings have caused gas to go up by 52 per cent in Paris, and electric current by 18 per cent.

See Steel Prices Rising

In the iron and steel industry, it has been calculated that an increase of wages of 25 per cent would cause, of itself, an increase of prices of from 5 to 6 per cent, provided the prices of coal and iron ore remained the same as now. In answer to the claims of the CGT that industry should bear the whole burden of the wage increase the employers point out that during the past 18 months they have made sacrifices to keep 60 per cent of their personnel while the rate of production was only 20 per cent, and most iron and steel concerns have had heavy losses. They believe, however, that a moderate increase of the government subsidy would be the means of avoiding a price increase. The subsidy has already been reduced from 58 per cent of the

value of invoices to 40 per cent, to take account of the increase in production.

Belgium is faced with the same kind of difficulties as France. There again the workers are claiming higher wages as the lowering that has been achieved in the cost of living has not been such as to increase sufficiently the purchasing power of wages. The Belgian Conference Nationale du Travail, which groups government representatives and delegates from the employers and the workers, were to meet Aug. 1 to discuss the situation further. In anticipation of this meeting a committee is working on the classification of the various trades. In regard to the coal miners it has already been agreed that all adult workers working full time at the face of the mine will receive a flat increase of wages of 20 Belgian francs (approximately 50c) per day.

In Luxemburg the output of iron and steel is tending upward. At the beginning of July, 13 blast furnaces were in operation. Output figures are as follows:

1946	Pig Iron (Metric tons)	Steel Ingots	Blast Furnaces (active)
Jan.	76,232	70,383	10
Feb.	72,800	73,887	10
Mar.	88,653	93,844	12
Apr.	97,090	96,807	12
May	108,795	103,415	12

Wright Cyclone Engine To Be Produced in China

Wright Cyclone 9 aircraft engines of a type which power many of America's DC-3 transport planes will be manufactured in China under a license agreement completed recently with the Chinese Air Force. Engineering data to implement this arrangement were delivered last week to a mission now visiting the Wright Aeronautical Corp., division of Curtiss-Wright Corp., it was announced.

For several years the Chinese have been assembling the nine-cylinder Cyclone out of parts manufactured here.

Rights to produce the engine in its entirety and to establish a complete manufacturing plant are involved in the new agreement, however.

The engineering data for use by the Chinese was delivered to Maj. P. H. Nieh, chairman of the liaison office in this country of the Commission on Aeronautical Affairs of the Republic of China.

Instrumental in the negotiation of the license agreement was Col. P. L. Li, acting chief of the Technical Training & Development Division of the Chinese Air Force in Washington.

Other members of the Chinese Commission at Wright Aeronautical are Maj. Y. S. Chu; Capts. Richard Liang and H. S. Wang; Lieuts. M. S. Huang, S. C. Chen, Y. C. Sun, Woo and Y. C. Chang.

Foreign Notes....

Palestine's imports in 1945 of many types of iron and steel products largely came from the United States, according to official figures from that country. The United States supplied 30 per cent of iron bars and rods, 70 per cent of iron pipe and 90 per cent of iron wire. The United Kingdom furnished the other principal shipments.

—o—

Plows for distribution by UNRRA are being made by English manufacturers at Bristol, Eng. A British manufacturer of galvanized agricultural and horticultural implements is reported to have made 8000 complete plows between December, 1945, and April, 1946.

—o—

Electrification of the railroad track between Amsterdam and Alkmaar in the Netherlands is scheduled this year, according to reports received by the Office of International Trade, Department of Commerce. Delivery of equipment and materials from Switzerland is expected soon.

—o—

Contractors and engineers in Brazil have asked government aid in acquiring machinery and equipment for civilian construction, according to a report to the Department of Commerce. Included among the machines sought are excavators, tractors, trucks, and concrete mixers.

—o—

Expenditures totaling approximately $200 million are planned for the next five years by the Hydroelectric Power Commission of Ontario for expansions. Under consideration is an increase to 60-cycle instead of 25-cycle power in the Niagara division, and a $300,000 expansion program to include two new substations, improved street lighting and new hot water heaters for private homes in York township.

—o—

Machinery imports of Tanganyika, other than electrical goods, from the United States have increased from 6.22 per cent in November, 1945, to 33.86 per cent in December, and in January to 41.03 per cent of the total valuation of $132,866, according to a report of that country's exports and imports received from Kenya, British East Africa.

—o—

Machinery purchases have been made in Switzerland for a projected small hydroelectric plant to be constructed on the Liffey river in Eire.

—o—

Work on two important power plants in southern Italy, the 150,000 volt line which is being rebuilt and the Gallett 35,000 kw unit, is scheduled to be completed by the middle of December, it i reported by an Allied utilities group.

—o—

Insecticide machinery is in demand in Spain, although imports are subject to government authorization, according to a report by American consular officials in Madrid.

—o—

Large hydroelectric and irrigation projects are planned for the Indian state of Hyderabad.

Australia's Imports of Electric Appliances Rise

Australia's imports of electrical appliances and equipment rose in 1945, compared with 1944, in all items except cable and wire, according to unofficial figures reported by the Department of Commerce.

Covered cable and wire imports dropped from £1,015,000 in 1944 to £662,000 in 1945, according to the department. Other imports were as follows: Batteries and accumulators, £202,000 in 1945 against £86,000 in 1944; dynamo electric machines, £778,000 and £478,000 respectively; filament lamps, £108,000 and £84,000; telegraph and telephone instruments, £1,380,000 and £705,000; other electrical appliances, £3,316,000 and £2,483,000.

Output at Volta Redonda Is 300,000 Tons Annually

Brazil's new steel plant, the National Steel Mill at Volta Redonda, will play a key role in the economic development of Brazil, according to Macedo Soares e Silva, minister of transportation and public works. The plant, located close to the Minas Geraes deposits of ore, is currently turning out ingots at the rate of 300,00 tons a year — more than the combined production of all South American mills until now, and is expected to produce one million tons a year when in full production.

Built with the aid of a $45 million credit from the Export-Import Bank, the mill is giving impetus to development of a Brazilian automobile industry which plans to use Volta Redonda steel in its cars.

Mr. Soares said that "there is no talk of nationalization in Brazil," and added that although some of the railroads there are government-owned, nationalization in every form is being discouraged.

YOU GET MORE PRODUCTS PER TON WITH N-A-X HIGH-TENSILE STEEL

★

The High Physical Properties of This Low-Alloy Steel Can Make Your Sheet Steel Go 33% Farther

★

Smaller Sections Provide the Saving

N-A-X HIGH-TENSILE steel has the strength, toughness, fatigue- and corrosion-resistance to permit reductions up to 25% in sectional thickness when it replaces carbon sheet steels. These outstanding properties mean durability in your finished part or product. And they are translated into production increases up to 33%.

Good Formability Makes the Switch Feasible

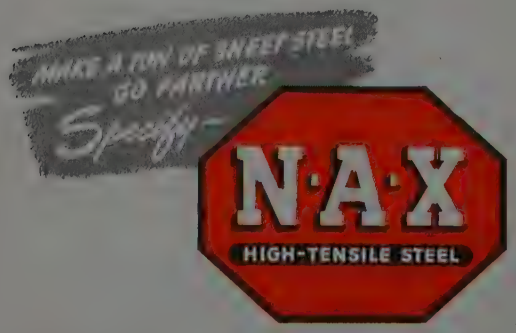
N-A-X HIGH-TENSILE is exceptional among high-strength steels because of its unique combination of strength *and ductility*. It can be cold-formed to intricate shapes and deep-drawn to produce parts normally fabricated out of mild carbon steels. N-A-X HIGH-TENSILE has demonstrated its formability in scores of severe fabricating operations, and requires little or no change in die design or press capacity.

Three Tons Can Do the Work of Four

By designing sections to take advantage of the high physical properties of N-A-X HIGH-TENSILE, manufacturers can use less steel per unit, get more units per ton. How great this increase will be depends, of course, on the particular part or product. But it is entirely reasonable to expect that three tons of N-A-X HIGH-TENSILE can be made to produce as many units as four tons of carbon sheet steel.

NOW LET'S LOOK AT OVER-ALL COSTS

There is only one fair way to compare the price factor of N-A-X HIGH-TENSILE and carbon sheet steel, and that is on the basis of over-all costs. It is our conviction that N-A-X HIGH-TENSILE will "pay its own way" by increasing production per ton, and by making possible many economies in handling, fabricating and finishing. We are ready to work with you closely on your particular problem of using N-A-X HIGH-TENSILE to make a ton of steel go farther.



GREAT LAKES STEEL
Corporation
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

COPYRIGHT 1946, GREAT LAKES STEEL CORPORATION

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Motive for Walter Reuther's request for union-management conference on automobile production problems still puzzles observers. Weekly output of cars for rest of 1946 expected to eclipse 1941 figures by substantial margin

DETROIT

OBSERVERS here have been trying to ferret out what lies behind the conciliatory tone of a letter addressed to top automotive executives by Walter Reuther, head of the UAW-CIO, proposing a joint conference last Friday between union representatives and management to "determine what are the obstacles in the way of full automobile production and to take steps to remove them." First reaction was that it was some sort of booby trap set for publicity purposes, or another attempt to reopen the industry-wide labor-management conference idea first discussed during wartime as a means of expediting production. If it was publicity, the proposal succeeded, for it made all the front pages.

The union president's actual words in his letter of invitation were: "We have been deeply troubled by the continued reports from management that industry cannot get into full production because of suppliers' strikes and material shortages. The UAW-CIO has just completed a survey of current strikes in our industry, and we are at a loss to explain how the existing strikes could seriously retard the achievement of higher production schedules.

Proposes Solving Problems Jointly

"We are, however, most anxious to do everything possible to remove any obstacles which stand in the way of achieving full production and full employment. We believe that it would be mutually helpful if the top officers of our union, who are familiar with the situation in the industry, could sit down with the leading representatives of management in the industry to discuss practical steps to be taken to get the industry on its feet and facilitate achievement of full production at the earliest possible date. Such a conference of labor and management could jointly explore and work toward a solution of the problems which are impeding production . . ."

The automotive industry always kept away from—and will continue to do so—anything resembling industry-wide action on labor matters. It prefers to deal with these problems on an individual company basis. If it had accepted the Reuther offer now, then at some later date he would have been in position of pointing to the willingness of the industry to discuss production matters in concert with the union and its unwillingness to discuss wages or some other union demands in similar fashion.

Of course, each plant has its own production troubles, and their discussion with the union is nothing new. Many times in the past, the management of one plant has called in its union representatives and said, in effect, "Look, boys, if we do not get these parts produced because of a strike in this department, then the whole plant will be closed and you will all be out of work. Get busy and adjust the trouble." Numerous examples could be cited of this procedure settling difficulties and permitting production to proceed.

Little can be accomplished besides a lot of bickering and needling on both sides, by a joint conference of top management officials and top union leaders. The road blocks are down among the lower echelons and should be dissolved at these levels. As a matter of fact, some of the independent producers are now operating at levels beyond their peak of 1941, and the industry week before last rolled out 83 per cent as many cars and trucks as in the comparable week of 1941. Last week, assemblies exceeded the 1941 total by some 50 per cent but this was occasioned by the fact that five years ago a model changeover had started and weekly output skidded to the 45,000 level, building up slowly in September and October to around 90,000 where it remained for the balance of the year. Hence there is little question weekly production for the rest of this year will eclipse the comparable totals of 1941 by a good margin. So perhaps Reuther's proposal was well-timed from his own standpoint because actually production is moving ahead of the comparable period in 1941 while labor interruptions, as he says, are abating; yet he was in perfect position to realize all the favorable publicity resulting from what at first glance may have appeared to be a magnanimous and co-operative gesture.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

Tabulated by Ward's Automotive Reports

	1946	1941
January	121,861	524,073
February	83,841	509,332
March	140,777	533,878
April	248,318	489,856
May	247,620	545,321
June	214,511*	546,278
July	341,000*	468,897
Estimates for week ended:		
July 13	74,015	114,318
July 20	80,985	109,912
July 27	86,980	105,635
Aug. 3	90,000	62,146

*Preliminary.

River Yields Lost Pig Iron

One of the most ingenious steps yet heard of to lick materials shortage problems comes out of Chevrolet Gray Iron Division at Saginaw. The foundry there was down to about the last few tons of pig iron and a scheduled shipment had not arrived, making an imminent shutdown of cupolas appear certain. For years, pig iron has been shipped into this plant by boat, and some clever individual suggested exploring the bottom of the river at dockside with an electromagnet to see what iron might be found there which had been dropped in unloading boats. A thorough search was carried out and 70 tons of pig iron rescued from its watery resting place. This amounted to about a car and a half and was sufficient to keep the foundry going until the late shipment arrived. This foundry also has purchased 3000 tons of pig iron from a Mexican blast furnace, through a U. S. supplier, but is keeping its fingers crossed as to whether the material can be melted up satisfactorily for automotive gray iron castings.

G. M. Shows Operating Loss

The long-awaited second quarter financial report of General Motors showed an operating loss of over $12 million which was transformed to a profit of $16,320,573 by application of estimated tax reductions. Taking into consideration the fact nearly all of GM's 1946 production to midyear of 263,000 cars and trucks was concentrated in the second quarter, because of the strike in force during the first quarter, the indicated operating loss amounts to about $46 per vehicle.

Despite favorable tax adjustments, the corporation showed a net loss of nearly $20 million for the first six months of this year, against net income of $111 mil-

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

FOR HEAVY WORK: This new Heil 11½-yard rock body with outside telescopic hoist mounted on an Autocar chassis is one of a fleet of such units the C. Reiss Steamship Co. will use on Drummond island, off the upper peninsula of Michigan, to handle dolomite

lion in the same period of 1945. The corporation spent for physical plant reconversion in the first half better than $21 million which was charged against operations, and an equivalent amount previously earmarked from reserves credited to income. The latest GM report notes that the amount of any adjustment accruing through carryback provisions of the revenue department as applied to unused excess profits credits is to be based on the total taxable earnings in the year. Since the year's earnings cannot be determined now, any tax adjustment applicable to a single quarter of the year is difficult to figure.

Chevrolet Plans New Foundry

Not yet announced but apparently well along into the planning stage is a large new Chevrolet foundry to be built somewhere in Ohio—not Cleveland, according to advance information. Presumably this new facility will be required to handle castings requirements of the new Chevrolet light car which is being manufactured in Cleveland, starting some time next year. Several of the top men at Saginaw Malleable Iron Division have been working on the project in Detroit and elsewhere. There may be a tieup between this proposed plant and the new central foundry division of GM at Lockport, N. Y., which was announced here last week.

New Chevrolet Plants Approved

Formal approval to construction of the two new Chevrolet plants in Cleveland was given by the CPA last week. Officials of the agency said the project would cost about $15,250,000 and is the largest authorized by the CPA since the Mar. 26 restrictive order on new construction. The same officials said about $50 million worth of equipment and machinery is being bought for the plants, while subcontracts and purchases incident to the plant's construction might amount to $100 million annually. The contrast of these staggering sums to be expended on the introduction of a single new model automobile with the money being invested by certain newcomers to the industry is more than a little startling and revealing.

New Ford Styling Expected

A new touch should be apparent shortly in the styling and design of Ford passenger cars, following announcement the company has retained the services of George W. Walker as design consultant to E. T. Gregorie, director of styling. Walker has been connected with Nash-Kelvinator in a similar capacity and had a prominent hand in developing the lines of the Nash 600 and Ambassador models in recent years. He was also credited with major contributions to the styling of the Packard Clipper models, and has operated an industrial design service in Detroit since 1929, now serving around 20 clients.

The consistent criticism of Ford body styling has been that the cars give the appearance of having been created by an engineer, rather than by a stylist—and there is a wide bridge between the two. The perfection of body symmetry and emphasis of proper highlights is something that requires an artist and not a drafting board. Often, of course, the stylist comes up with a rendering which is impossible engineering-wise, but in compromising between what he would like and what can be done, he cannot back down too far or the appeal to the esthetic is lost.

Henry Ford Observes Birthday

Last Tuesday was the 83rd birthday of Henry Ford and while the founder of the Ford empire is no longer in the best of health and has somewhat tempered his former intense activity in plant operations and general conduct of the business, he found time to issue his annual optimistic statement which read in part: "I am convinced that after five years of war and its subsequent problems, this nation is ready, willing and able to prepare itself for an unprecedented future of peace and prosperity. As always, I look to the young people of this country for the real solutions of our problems. May I suggest they devote themselves to clear and long-range thinking and planning, to selection of proper and sincere leadership and, above all, to hard work. With these as the goal, I am sure this nation and the world will again be on the right track."

Repair Parts Critically Short

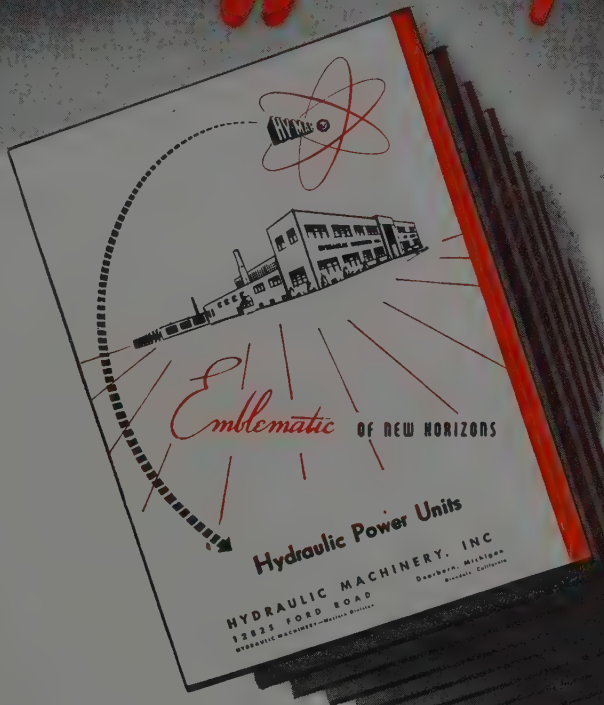
Survey of the repair and replacement automotive parts situation conducted by the Automobile Manufacturers Association shows a critical lack in many categories, with some parts virtually out of supply. The latter include crankshafts, connecting rod and main bearings, wormshafts and certain roller and ball bearings used in steering mechanisms, clutch throwout bearings, cylinder head gaskets, transmission parts, mufflers, brake drums —even door locks for some models. Replacement parts backlog orders have jumped as much as 400 per cent over last year. Tools and dies for the production of many repair parts were scrapped during the war years, and new ones are slow to be delivered.

Jeep Station Wagon Offered

New type of simulated station wagon with all-steel body mounted on a jeep chassis has been announced by Willys-Overland.

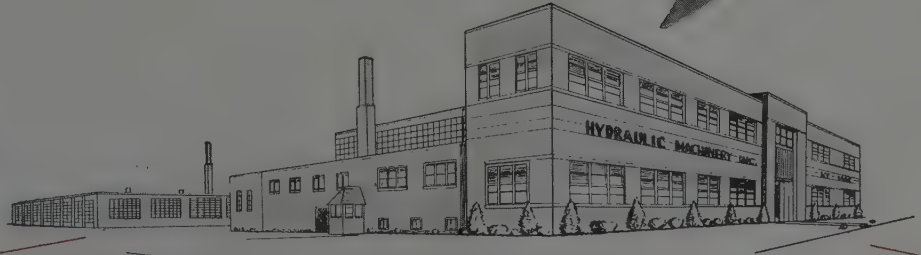
Chassis modifications include independent front wheel suspension, rear drive only with hypoid axle.

Just off the press



this new book will tell you all about it

All about Hy-Mac hydraulic Power Units, that can be applied to drilling, grinding, milling, boring, piercing, riveting, broaching, pressing and special applications . . . just determine the functions of the machines that are to be hydraulically operated—and our engineers will recommend a Power Unit and a layout of circuits to best do the job . . . a request on your letterhead will bring a copy of this twelve-page brochure that outlines our facilities.



HYDRAULIC MACHINERY, INC.

12825 FORD ROAD | **Dearborn, Michigan**

WESTERN DIVISION | **GLENDALE, CALIFORNIA**

Kidde Company Buys Plants at Belleville, N. J.

Producer of fire protection equipment acquires government-owned factories it operated in wartime

PURCHASE of three of the seven plants operated at Belleville, N. J., during the war by Walter Kidde & Co. Inc., New York, has been made from the federal government for $1,800,000.

The company, a pioneer in the engineering and production of fire protection equipment, has turned the capacity of the Belleville plants to production of fire protection equipment for industrial users.

The Kidde company also will manufacture oil reclaimers, jacket oil heaters, plasticoaters, and textile equipment.

Westinghouse Forms Group To Develop New Weapons

Formation by Westinghouse Electric Corp., Pittsburgh, of a new Special Products Engineering Department to co-operate with the Army and Navy in the development of improved weapons and equipment has been announced by M. W. Smith, vice president in charge of engineering.

Purposes of the new department as explained by Mr. Smith are to "carry out a long-range program, co-ordinating the work formerly done by many different departments. At the present time, we expect to devote most of the efforts of this group to the development of improved Army and Navy ordnance equipment and to the development of airborne equipment for military purposes."

Manager of the department will be Dr. W. H. Brandt who has been assistant manager of the Materials Engineering Department of the company. John F. Peters will act as consulting engineer.

Boiler Control Device Seen As Aid to Foreign Industry

A steam boiler control device developed by Hagan Corp., Pittsburgh, is winning wide acceptance in Europe and is reportedly playing an important part in helping overcome the acute fuel shortage in many countries.

The Hagan control system, handled in the European area by an English concern, James Gordon & Co. Ltd., permits automatic operation of steam boilers by remote control, steam production being kept constantly in line with variations in demand.

Installations completed before and during the war show that considerable fuel economy can be obtained, said J. E. O'Breen, managing director of the Gordon company, who is visiting the United States. With an acute coal shortage abroad, Mr. O'Breen expects a rapid growth of the use of the control device throughout Europe.

Latest American developments in combustion control are being explained by R. R. Donaldson (right), chief engineer, Hagan Corp., Pittsburgh, to J. E. O'Breen, managing director of James Gordon & Co. Ltd., Middlesex, England, European representative for Hagan combustion controls

BRIEFS . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Eversharp Inc., Chicago, has begun its expansion program by leasing a five-story building at 4737 N. Ravenswood Ave., Chicago. The plant has 50,000 square feet and will be used for manufacturing operations.

—o—

Davey Compressor Co., Kent, O., has appointed Wabash Equipment & Supply Co., Indianapolis, as a distributor.

—o—

Charles A. Koons & Co., New York, has purchased Tri-Boro Steel Supply Co., Inc., Bronx, N. Y. Avery C. Adams has been named president, and Charles A. Koons, vice president and treasurer. Additional equipment is being installed and the company will stock alloy and stainless steel in addition to carbon grades.

—o—

Baldwin Locomotive Works, Philadelphia, has issued a bulletin giving the specifications for its new universal impact testing machine for metals. The machine has six possible ranges: 25-60 ft. lb., 50-120 ft. lb. and 100-240 ft. lb.

—o—

Aro Equipment Corp., Bryan, O., has appointed the following as jobbers for its line of pneumatic tools: Roanoke Steel & Supply Co., Roanoke, Va.; M. T. Gossett Co., Nashville, Tenn.; Lindholm-Berg Auto Parts, Hutchinson, Kans.; Motor Car Supply Co., Seattle; Rea & Co., Oakland, Calif.; Thomas M. Aaron, Fresno, Calif.; Industrial Sales Co., San Jose, Calif.; Weber Hardware Co. Ltd., Kitchener, Ont.; and D. M. Duncan Machinery Co., Windsor, Ont.

—o—

Plating Institute, Detroit, has established a committee of experts to assist manufacturers in selecting the type of plating, rustproofing or metal finishing best suited to their purpose.

—o—

B. C. Ames Co., Waltham, Mass., recently reorganized, has sold its manufacturing rights in Ames bench lathes, milling machines and hardness testers to Ames Precision Machine Works, that city, but will continue manufacture of micrometer dial gages and indicators.

—o—

Allis-Chalmers Mfg. Co., Milwaukee, is conducting a study of the nature and cause of turbine blade deposits.

—o—

Ajax Heat Treating & Welding Co., Latrobe, Pa., has been formed and is now installing equipment. The company

will specialize in commercial heat treating and general welding.

—o—

Burroughs Adding Machine Co., Detroit, had an order backlog of more than $50 million at the end of the first half of the year.

—o—

Crosley Corp., Cincinnati, has developed a new line of gas and electric ranges which features a one-piece structural core which supports the top and contains the ovens and drawers.

—o—

P. R. Mallory & Co. Inc., Indianapolis, has established a new plant at 8605 Livernois Ave., Detroit, which is in operation manufacturing special resistance welding dies, electrodes and allied welding parts.

—o—

Reynolds Metals Co., Richmond, Va., has begun production of an aluminum dinette set and a utility table with matching chairs. The furniture is being made at the company's Louisville, Ky., and Pasadena, Calif., plants.

—o—

Magnesium Co. of America Inc., Chicago, has developed a magnesium dockboard to replace heavy steel platforms as bridges between loading docks and freight cars and trucks. The new dockboards are said to weigh only one-third to one-fourth as much as steel boards of equal strength.

—o—

General Electric Co., Schenectady, N. Y., has awarded 50 fellowships to high school teachers of chemistry and physics for a six-weeks refresher course at Union College, Schenectady.

—o—

Upson Co., Lockport, N. Y., closed its plant for two weeks on July 29 so that all its employees might take their vacations simultaneously.

—o—

Gamble & Gamble, Buffalo, has been formed as manufacturers' representatives. The partnership is composed of William J. Gamble, who has been active in the steel fabrication industry, and Robert N. Gamble, a graduate mechanical engineer.

—o—

Ferracute Machine Co., Bridgeton, N. J., has appointed Voss Machinery Co., Pittsburgh, as distributor for its cutting, forming and punch presses for western Pennsylvania, West Virginia, eastern Ohio and western Maryland.

—o—

Luria Steel & Trading Co., New York, has opened a New England office at 53 State St., Boston, with Mortimer F. Luria as district manager.

—o—

Douglas Aircraft Co. Inc., Santa Monica, Calif., has begun production of an aluminum unsinkable rowboat. The boat, which weighs only 70 pounds, is ten feet long and 4 feet wide.

—o—

Keystone Abrasive Wheel Inc., Carnegie, Pa., has opened offices at 1500 Walnut St., Philadelphia, and Guardian Bldg., Detroit. The offices are under the direction of B. L. Schaefer and Edward B. Caulkins Jr., respectively.

—o—

Rogers Diesel & Aircraft Corp., New York, has changed its name to R. B. Rogers Companies Inc.

—o—

William F. McGraw & Co., Detroit, has moved into its new building at 575 E. Milwaukee St., that city.

—o—

Youngstown Steel Products Co., Youngstown, representative of Youngstown Sheet & Tube Co., has opened a district office at 520 Whitney Bldg., New Orleans. O. B. Ewing is district sales manager.

—o—

B. F. Sturtevant Co., Hyde Park, Mass., a division of Westinghouse Electric Corp., has resumed its sales engineering school for graduate engineers. The course includes the fundamentals of air handling and air conditioning and the application of equipment used in those fields.

—o—

John S. Barnes Corp., Rockford, Ill., has appointed George M. Pearse Co., Newark, N. J., as its representative in the metropolitan New York and Newark territory.

—o—

Jessop Steel Co., Washington, Pa., has moved its Chicago office from 1742 West Carroll Ave. to 311 South Green St., Chicago 7.

—o—

Bendix Home Appliances Inc., South Bend, Ind., recently held a sales conference and training school for distributors from Canada, Mexico, Chile, Puerto Rico, Hawaii and the Philippine Islands.

—o—

Eaton Mfg. Co., Cleveland, has published an illustrated history entitled *A Chronicle of the Automotive Industry in America*—1893 *to* 1946 commemorating the Golden Jubilee of the automobile and the company's 35th anniversary.

—o—

Pullman-Standard Car Mfg. Co., Chicago, has completed and delivered its 100th postwar streamlined passenger car. The company's backlog of streamlined passenger cars is now 1445.

—o—

Denison Engineering Co., Columbus, O., has appointed the following exclusive dealers: Briggs-Weaver Machinery Co., Dallas, Tex., for northern Texas, New Mexico and western Oklahoma; Noland Co., Chattanooga, Tenn., for Alabama, Georgia and part of Tennessee; and B & W Machine Co., Indianapolis, for southern Indiana and western Kentucky.

—o—

Cleveland-Tungsten Inc., Cleveland, a subsidiary of Molybdenum Corp. of America, Pittsburgh, has purchased General Tungsten Mfg. Co. Inc., Union City, N. J., which will continue to manufacture electrical contacts.

—o—

Bradford Machine Tool Co., Cincinnati, has added a line of electrical tools to its other products.

New Company Will Produce Household Vacuum Cleaner

McAllister-Ross Corp., Chicago, has been formed to manufacture and distribute household vacuum cleaners and has purchased the assets of Franklin-McAllister Corp., Chicago, prewar manufacturer of vacuum cleaners. Automatic Washer Co., Newton, Iowa, will also manufacture the McAllister line of cleaners for distribution through McAllister-Ross' 53 appliance distributors.

Officers of the new company are H. J. McAllister, formerly vice president in charge of merchandising of the Franklin-McAllister Corp., who is president; and Charles Ross, formerly in charge of the electric refrigeration department, Sears, Roebuck Co., Chicago, who is vice president and treasurer.

Escondido Airpark To Have Novel Community Facilities

A unique airpark development now under construction in Escondido, Calif., is a community - within - a - community which may point the way for similar projects in other areas. When fully completed the airpark will consist of an airstrip 5000 feet long which will accommodate not only small private planes but also cargo planes to haul fresh fruit to eastern markets, up to 150 individual T-hangars, facilities to sell and repair planes, autos, trucks and farm equipment, a midget race track, a riding academy and golf course, administration and recreation buildings, and a large residential community with citrus and avocado orchards.

By diversification of interests in the project, the builder, John H. Engel, expects to narrow the investment risks involved, and although he regards the aviation part of the development as a luxury, he believes that the other phases of the project are necessities in the community.

Coast Steel TradeHolds Price Line

Confused situation prevails as result of re-establishment of OPA controls. Effect on prices uncertain. Employment gains

LOS ANGELES

SELLERS of steel in southern California last week expressed their outlook as "temporarily more confused than before" by the reinstitution of OPA controls on many products. It will require a month before the new program becomes clarified to the point of predictability as to its effect on prices in general.

Manufacturers exercised restraint during the lapse of controls. A large proportion of the increases to date have been on agricultural products. In this connection, farm income continues to show gains over a year ago, with returns in the area more than 5 per cent greater than in the first half of 1945. Total farm income in the 14 southern counties of California will exceed $1 billion as compared with $930 million in 1945 and $310 million in 1939.

The expansion in industrial plants in Los Angeles county for June, 1946, totaled $11 million, bringing the total for the first six months of the year to $310 million.

Manufacturing employment in Los Angeles county showed no change between May and June. Total employment, however, has risen steadily since last autumn, with county civilians in jobs to the number of 1,308,000 in April in comparison with 1,272,000 last November. Number of civilians now employed, incidentally, is 27 per cent greater than in April, 1940.

Building permits have tightened considerably, due to the institution of Civilian Production Authority controls. Nevertheless, the dollar volume of permits in the first half of 1946 was larger than for any other full year on record, it was said.

Real estate sales in the county have dropped 20 per cent from the peak reached last March. County records show that most of this decline has been confined to vacant property sales. Sales of improved realty hold at approximately the level of last March.

AIDS AVIATION: Latest in aviation research is this wind tunnel at Moffett Field, Calif., where problems of flight at speeds of sound—720 mph or more—will be studied. The huge instrument, just completed by the National Advisory Committee for Aeronautics, combines versatility and accuracy of study conditions. NEA photo

Business men repeatedly ask for population data on Los Angeles and other southern California counties. Interest has been stimulated by some recent rather startling forecasts of future growth, these predictions crystallizing into a round figure of about 6 million persons in Los Angeles county by 1960.

In appraising the future, the past is helpful. During the last 30 years the increase has averaged 90,000 persons a year in the county. To reach 6 million by 1960 will require an annual average growth of 174,000 for the next 14 years. This would indicate that such a forecast is on the optimistic side.

History of growth in other large American population centers indicates that the increase will be of more modest proportions.

Despite this, there is every reason to expect the county to continue to grow as or more rapidly than any other metropolitan area in the nation.

The present population of Los Angeles county is placed at more than 3,600,000, as compared with the last official census figure of 2,785,643 on April 1, 1940. Should future growth continue on present volume rate, a county population of approximately 5 million by 1960 appears soundly predicated.

Summary of factory growth in the county points to the fact that there are now 77 per cent more workers on industrial payrolls than in 1939. Total factory wage payments were $47 million in May, more than three times the monthly average for 1939.

Factory paychecks averaged $51 per week in May, or 85 per cent above the average for 1939. (Wartime weekly checks were $57.) Currently the worker averages about 40 hours a week as compared with 46 hours in wartime.

Consolidated Completes Shipbuilding Program

The shipbuilding program of Consolidated Steel Corp. ended last week at Los Angeles when the company announced completion of its 200th big vessel, the last of a list of wartime commitments, the 460-foot steamer, *Golden Light.*

Structural Fabricators Report California Prospects Promising

Construction program getting under way which may top anything experienced in past in area. Large backlog of office, store and other commercial structures built up. Fabricating capacity of district never fully engaged

BRIGHT prospects for the structural steel fabricating industry during the next few years are foreseen by L. A. Peck, Judson Pacific-Murphy Corp., in a report published by the California State Chamber of Commerce.

Pointing out that the West Coast is starting on a construction program far greater than any in the past, Mr. Peck sees a large potential volume of business in this area. Public agencies, he says, have completed plans involving large tonnages of structural steel and private industry is preparing to expand present industrial plants and build new factories. A large backlog of office, store and other commercial buildings has been built up to further swell the total tonnage.

"There is no doubt," according to Mr. Peck, "that the fabricating capacity of the industry will be ample to handle this increased volume of business. The capacity of the industry has never been fully utilized, even during the boom year 1929.

"The capacity existing before the war now has been materially increased by new wartime plants which are adaptable to the fabrication of structural steel."

Steel Costs Increases Are Small

Mr. Peck says the economic position of fabricated structural steel is better at present than at any time in the past primarily because the advance in costs of such steel has been less than of other construction materials. He points out that the principal handicap which can seriously becloud the favorable outlook is unavailability of plain material. The most difficult items to obtain at present are wide flange sections which are all rolled at eastern mills.

Mr. Peck also reported that there is at present a shortage of skilled steel draftsmen, but he believes this scarcity will be only temporary.

Construction of Columbia Steel Co.'s new $25 million cold reduction steel sheet and tin plate mill at Pittsburg, Calif., is proceeding on schedule. Preliminary grading has been completed and pouring of concrete foundations is just getting under way. Other progress is reported in laying of 80,000 lineal feet of pipe, ranging from 36-inch sewers to 1-inch gas and air lines. Construction of deep water docks adjacent to the plant also has been started, as has laying of 40,000 feet of railroad trackage. Erection of buildings is expected to be begun in September.

When completed next year the new mill will have a productive capacity for 500,000 tons of steel sheets and tin plate annually, and will be the first West Coast mill for manufacture of those products.

Columbia has placed orders for 27 million pounds of machinery, including the following equipment: One 56-inch, 5-stand, 4-high cold reduction mill; two continuous electrolytic cleaning lines; three tin plate shearing lines; a tin plate side trimming and reshearing line; tin plate and sheet coil annealing equipment; sheet shearing and processing equipment for sheet and drum stock; continuous pickling lines; fourteen hot-dip tinning units; one continuous electrolytic tinning line and auxiliary equipment; a sheet galvanizing line; and 21 utility cranes.

Meanwhile, at Geneva Steel Co. in Utah, subsidiary of Columbia, it was planned to have three of the nine open-hearth furnaces in operation this week and the slab mill was scheduled to start operation also. The plate mill will start rolling also this month.

Three Kaiser Shipyards Returned to Government

The shipbuilding careers of three of the four Kaiser shipyards at Richmond, Calif., closed officially at midnight Wednesday, July 31, when they were turned back to the U. S. Maritime Commission for ultimate disposal as surplus.

Involved in the transfer are yards 1, 2 and 4, all built and operated by the Henry J. Kaiser interests for the Maritime Commission during the war.

The three yards produced a total of 712 ships, including 30 British cargo, 489 Liberties, 110 AP-2 Victories, 10 AP-3 Victories, 22 AP-5 Attack Transports, 15 LST's, 12 Navy gunboats and 24 C-1 coastal cargo vessels.

Yard 3, which is being retained by Kaiser Co. Inc., is being operated as a repair yard and also is engaged in reconversion of transports and the building of 900-ton cargo barges.

First Aluminum Poured at Mead Reduction Plant in Washington Since Last November

SEATTLE

REACTIVATION of the aluminum-reduction plant at Mead, near Spokane, began last week under the banner of the Kaiser interests. First of six pot lines started operations and the first ingots were poured since last November when the government plant was closed.

The new management announced present production will be limited to one line, the ingots going to the Kaiser Trentwood aluminum rolling mill which began production recently.

Opening of Mead means the return to the U. S. Treasury of $59 million of silver bars used during the war in the electrical equipment in lieu of copper which was unobtainable. The silver was lent for the war period. Large smelting interests are reported to have been asked to bid on remelting the bus bars for return to the Treasury. The value is based at 71.1 cents. The silver was used in various shapes but must be of standard bullion bar size for storage in the government's vaults.

Bonneville Power Administration officials announce contracts for delivery of public power to the Spokane aluminum rolling mill and reduction plants which will recover to some extent the power load lost at the end of the war. The Spokane plants are taking about 60,000 kw at present and at full capacity will require 250,000 kws. Under terms of the proposed agreement Bonneville will supply up to 32,000 kws for each of the reduction plant's six potlines, full operation being scheduled for early next year. Delivery of up to 40,000 kws for the rolling mill is provided under the agreement.

Denial of reports that Todd Pacific Shipyards at Tacoma will close Sept. 1 has been made by President R. J. Lamont. The Tacoma plant will complete present contracts about that date, he added, but then it will be taken over by the Navy for berthing 30 or more vessels. The company has notified its Tacoma employees to begin arrangements for transferring to civil service employment with the Navy. It is expected that many of the present 2400 workers will be retained.

Men of Industry

EMIL KERN

E. O. BRADY

C. W. HAGENBUCH

Emil Kern has been appointed chief engineer, Allegheny Ludlum Steel Corp., Pittsburgh. He will have headquarters in Brackenridge, Pa. Mr. Kern was chief mechanical engineer, Reynolds Metals Co., Richmond, Va.

—o—

Creston E. Kite has been elected vice president in charge of sales, General Alloys Co., Boston. He joined the company last January as assistant to the president. Prior to that he was a sales executive, eastern district, E. F. Houghton & Co., Philadelphia.

—o—

George W. Kurachek has been named assistant foundry superintendent, Castalloy Co. Inc., Cambridge, Mass. He had been foundry metallurgist, Wright Aeronautical Corp., Paterson, N. J.

—o—

Nelson R. Combs, recently released from the Navy, has been appointed director of advertising and public relations, Designers for Industry Inc., Cleveland. Prior to service with the Navy, he was assistant sales manager, Natural Sugars Inc., New York.

—o—

Wilfred G. Cryderman has been appointed sales representative, Dayton, O., office, Hanson-Van Winkle-Munning Co., Matawan, N. J. He had been with the Cleveland office of Westinghouse Electric Corp., Pittsburgh. **Howard L. Wright** has been named sales representative in the Philadelphia office of the H-VW-M Co. He was recently released from the Navy.

—o—

William R. Bowen, recently released from the Navy, has returned to Farrel-Birmingham Co. Inc., Ansonia, Conn., and is now manager of the company's branch sales office at Akron. He succeeds **Harry D. Temporal,** who will manage the Farrel-Birmingham office in Chicago. Mr. Bowen joined the company in 1934, and was appointed assistant general purchasing agent in 1942.

—o—

E. O. Brady has been appointed general manager, Plumbingware Division, Briggs Mfg. Co., Detroit, succeeding the late Richard B. Jenkins. Mr. Brady had been general sales manager of the division since 1944, having joined it in 1935.

—o—

John McElroy has been appointed assistant advertising manager, Copperweld Steel Co., Glassport, Pa. He was a writer and field contact man, sales promotion department, Standard Brands Inc., New York.

—o—

R. A. Joslyn has been elected vice president, Reynolds Wire Co., Dixon, Ill. **Harold Rorer,** treasurer of the company for 17 years, has been elected a director. The elections followed the retirement, after 19 years of service, of **L. G. MacDonald,** vice president and director of the company. Mr. Joslyn had been purchasing agent with the company since 1937.

—o—

Louis H. Armstrong has been appointed assistant to the general manager, Rustless Division, American Rolling Mill Co., Baltimore. He has also been elected assistant secretary of American Rolling Mill Co. He joined the Rustless Division in 1936, and had been personnel manager since 1942. **Stanley M. Brah** has been appointed supervisor of personal relations, after having served four years as training advisor. **Joseph F. Mohan Jr.** has been made training advisor. He joined the organization in 1944 as supervisor, personnel research. **Wilbur W. Cole** has been appointed works accountant. He joined the Rustless organization in 1929, and had been supervisor of cost accounting since 1941.

—o—

C. W. Hagenbuch has been appointed assistant vice president, Sheffield Steel Corp., Kansas City, Mo. Mr. Hagenbuch joined the company, then known as the Kansas City Bolt & Nut Co., in 1920. Under his direction as assistant vice president will be the development and merchandising of new products, as well as overall producion and mill scheduling of all Sheffield products.

—o—

Harold S. Hoover has been appointed director of public relations, Upson Co., Lockport, N. Y. He was previously associated with the Manufacturing Division, Crosley Corp., Cincinnati, and with General Tire & Rubber Co., Akron, as director of public relations.

—o—

H. H. Blosjo, metallurgist, Minneapolis Electric Steel Castings Co., Minneapolis, has been reappointed chairman of the Steel Division program and papers committee, American Foundrymen's Association for 1946-47. Other appointments to the committee are: **E. C. Troy,** metallurgist, Dodge Steel Co., Philadelphia, vice chairman; **J. A. Duma,** metallurgist, Foundry Division, Norfolk Naval Shipyard, Portsmouth, Va.; **J. A. Rassenfoos,** supervisory engineer, research laboratory, American Steel Foundries, East Chicago, Ind.; and **Gosta Vennerholm,** metallurgist, Ford Motor Co., Dearborn, Mich.

—o—

Glenn Cogsdill has joined William F. McGraw & Co., Detroit, as service engineer. He will specialize in all cutting tool production problems. Mr. Cogsdill

Without more scrap

STEEL PRODUCTION WILL DROP!

During the war huge quantities of iron and steel scrap were needed to make steel for the Allied war machine. Demand always exceeded the supply.

Today the *situation is just as critical.* Lives are not at stake now — but the country's reconversion program hangs in the balance. The situation is simply this:

The present high rate of steel production cannot be maintained unless more scrap is shipped to the mills promptly. Some steel mills are being forced to bank their furnaces; others may soon find it necessary to curtail operations. There is only one possible solution: More Scrap.

HOW YOU CAN HELP

We urge you to collect every pound of iron and steel scrap in your plant, including obsolete and unused jigs, dies, and other equipment. Separate it into ferrous and non-ferrous metals. Then hurry it to the steel industry through your regular channels.

Remember, about one-half ton of steel scrap is needed for every ton of new steel produced. Help keep steel rolling! The American Rolling Mill Company, 4191 Curtis Street, Middletown, Ohio.

ARMCO

TURN IN ALL YOUR SCRAP

was with Cogsdill Twist Drill Co., Detroit. **A. J. Rosborough** has been appointed sales manager for the McGraw organization. Other sales personnel includes: **C. T. McGraw, H. H. Stilson, John P. Knechtges, Bruce Monhan, James J. Ryan, King Page, George Bixler, John Lamb,** and **Jack Franlick.**

—o—

Albert W. Lohn has been promoted to vice president, Ducommun Metals & Supply Co., Los Angeles. He will continue to serve as general manager of the company, a position he has held for the last seven years. Mr. Lohn has been with the firm 35 years.

—o—

H. C. Fechtmeyer has been appointed controller, Ampco Metal Inc., Milwaukee. He joined the company in 1943 as a wage and salary administrator. His most recent position was assistant to the president. **E. E. Jagmin,** formerly superintendent of production, has been appointed general superintendent of all the firm's manufacturing facilities.

—o—

Albert S. Tomlinson has taken charge of the new Bakery Conveyor Table Division, Island Equipment Corp., New York.

—o—

Forest S. Burtch has been promoted to manager of sales, Wire Rope Division, John A. Roebling's Sons Co., Trenton, N. J., succeeding **Earl N. Graf,** recently resigned. He joined the company in 1923, and had been manager of sales for the Aircord Division since 1943. **William Hobbs Jr.** has been named manager of sales of the Aircord Division of the company. He had been a member of the Roebling engineering staff since 1934.

—o—

Raymond H. Van Saun has been appointed manager, Mexico City plant, Rheem de Mexico S. A., a new company run in co-operation with Rheem Mfg. Co., New York. Prior to joining Rheem as assistant plant manager of the Richmond, Calif., plant, he was associated for 10 years with Container Corp. of America, Chicago.

—o—

G. J. Parker has succeeded **E. J. Norton** as manager, Pottstown plant, Spicer Mfg. Division, Pottstown, Pa., Spicer Mfg. Corp.

—o—

Emanuel Heller has been appointed director of sales and advertising, Burkaw Electric Co., New York.

—o—

Frank V. Lockefer has been appointed general sales manager, Mid-States Equipment Corp., Chicago. Mr. Lockefer was a sales executive with Rit Products Corp., Chicago, for eight years.

—o—

Dr. L. N. Bramley has been appointed electrical engineer, Plant Engineering Division, British Iron & Steel Research Association, where he will work on problems concerning electrical equipment for steel plants.

—o—

Warren Ames has been appointed president, and **H. C. Haynes,** treasurer, of the recently reorganized B. C. Ames Co., Waltham, Mass.

—o—

M. F. Rummel, identified since 1927 with Pontiac Motor Division, Pontiac, Mich., General Motors Corp., Detroit, has been appointed purchasing agent, succeeding **C. E. Gordon,** resigned. Mr. Rummel has been acting purchasing agent of the organization since April.

—o—

Dr. Donald H. Powers has been promoted to director, textile chemical department, Merrimac Division, Everett, Mass., Monsanto Chemical Co., St. Louis. Dr. Powers was director of chemical sales development of the company's Merrimac Division. The promotion places Dr. Powers in charge of sales, sales promotion and research activities of the textile chemical department. **Nate L. Crabtree,** recently made special assistant to **D. S. Dinsmoor,** general manager of the Merrimac Division, has been named to take charge of sales promotion activities of the textile chemical department. **Sawyer Sylvester** has been named to head the department's technical section. **Dr. Ralph Nickerson** has been appointed to the textile research department of the Merrimac Division. He joins **Dr. Oscar Cohen,** recently appointed to the department. Dr. Nickerson was with Firestone Tire & Rubber Co., Akron.

—o—

Leslie C. Smith, for the last three years Chicago district manager, Peninsular Grinding Wheel Co., Detroit, has become associated with Harry W. Leighton Co., Milwaukee, and will represent the company in the state of Wisconsin. For the last two years, Mr. Smith has been secretary, Chicago chapter, American Foundrymen's Association.

—o—

Keith Williams, president, Pratt & Letchworth Co. Inc., Buffalo, has been appointed chairman of the board of trustees, New York Institute of Applied Arts & Sciences.

—o—

P. D. Scott has been appointed general sales manager, Alloy Rods Co., York, Pa. He joined the company last January as manager, Tool Steel Electrode Division. In his new position, Mr. Scott will be in charge of tool steel electrodes, as well as stainless steel, cast iron and other special alloy electrodes manufactured by the company.

—o—

W. Stewart Clark, manager of manufacturing, appliance and merchandise department, General Electric Co., Schenectady, N. Y., has retired. He has been succeeded by **Carl M. Lynge,** general works

FOREST S. BURTCH

M. F. RUMMEL

P. D. SCOTT

UNIFORM FORGING QUALITY starts in the Timken Melt Shop

Forging improves steel quality, but it won't make good steel out of poor steel. *Forging quality is born in the melt shop.*

As this fact becomes better known, more and more steel users are placing Timken in the preferred position as a source for alloy forging steels.

Because the rigid system of quality control which governs melting in the Timken mills is excelled nowhere in the industry.

Because the personnel in no other melt shop has such specialized experience in producing alloy steels to close specifications.

Because research programs of The Timken Company have established countless new facts which have led to improved techniques in electric and open hearth furnace operation.

Advanced melting practice plus specialized processing techniques assure the uniform response to heat treatment so essential in producing good low cost forgings. Why not talk over your requirements with us, write Steel and Tube Division, The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
Fine Alloy
STEEL AND SEAMLESS TUBES

★ YEARS AHEAD — THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS in hot rolled and cold finished Alloy Steel Bars for forging and machining applications, as well as a complete range of Stainless, Graphitic and Standard Tool Steel analyses. Also Alloy and Stainless Steel Seamless Tubing for mechanical and pressure tube applications.

manager of the company's Bridgeport, Conn., plant. Mr. Clark had been with the company 47 years, 26 of which were spent as executive head of the Bridgeport works. Mr. Lynge, who had already assumed part of Mr. Clark's duties in January when the latter relinquished the position of Bridgeport works manager, will take over the responsibility for general manufacturing activities in all the plants of the appliance and merchandise department throughout the country. He will also continue as manufacturing operations head of the Bridgeport works and all branch plants. Mr. Lynge joined G. E. in 1912, and has been with the Bridgeport works since 1920.

—o—

O. N. Miller has been appointed general manager of manufacturing, Standard Oil Co. of California, San Francisco, in charge of the Richmond, El Segundo and Bakersfield refineries. He succeeds **C. E. Finney Jr.**, who recently was named vice president of the company.

—o—

Frank C. Seager has been appointed assistant sales manager in charge of selling, TelAutograph Corp., New York. He was recently released from the Army. **John J. Deane** has been promoted to assistant manager in charge of training for the corporation. Mr. Deane has been with TelAutograph for the last 18 years.

—o—

Richard T. Nalle, executive vice president, Midvale Co., Philadelphia, has been elected to the board of directors of Pennsylvania Salt Mfg. Co., Philadelphia, succeeding the late **John S. Jenks.**

—o—

Edward B. Westall, recently released from the Navy, has joined Hanford Foundry Co., San Bernardino, Cal.

—o—

C. H. Welch has been appointed plant manager, and **J. E. Giekler**, superintendent, Alloy Cast Steel Co., Marion, O. Mr. Welch had been superintendent of the company since 1928. In his new position, he succeeds **W. A. Dorsey** who retired recently as vice president and works manager. Mr. Giekler had been assistant superintendent of the company since 1942.

—o—

Palmer Cosslett Putnam, who directed design and development of various amphibious weapons used by the Allies in the war, has been appointed consulting engineer to the American Railway Car Institute, New York.

—o—

Harold E. Joy, since 1919 active in various executive positions in the purchasing, production and planning departments, Dodge Division, Chrysler Corp., Detroit, has been named assistant purchasing agent, Ford Motor Co., Dearborn, Mich. During the war, he was in charge of all purchases for the Chrysler Tank Arsenal. **John A. Wallace**, traffic manager of Packard Motor Car Co., Detroit, has been appointed director of traffic at Ford Motor. The appointment returns Mr. Wallace to the company he served in various capacities for almost 22 years.

—o—

George E. Agnew, for three and a half years associated with Consolidated Vultee Aircraft Corp., San Diego, Calif., has been named chief engineer in charge of design and development work for Coatesville Plate Washer Co., Coatesville, Pa.

—o—

R. W. Gillmore, recently released from the Navy, has been named manager of the Evansville, Ind., branch office, Allis-Chalmers Mfg. Co., Milwaukee. Mr. Gillmore originally joined the company in 1935, and was a sales engineer in the Indianapolis district office.

—o—

Paul A. Martin, assistant secretary, Johnson Tin Foil & Metal Co., St. Louis, and **Elroy L. Sandberg**, controller and assistant treasurer, South Wind Division, Indianapolis, Stewart-Warner Corp., Chicago, have been elected to membership in the Controllers Institute of America, New York.

—o—

Bernard L. Bray has been appointed sales manager, Marine Equipment Division, Ellinwood Industries, Los Angeles. Mr. Bray had previously served as engineer, sales engineer and western factory representative for aircraft, marine and general hydraulic manufacturing concerns.

—o—

Governor Raymond E. Baldwin of Connecticut, and **Austin R. Zender**, vice president of sales, Bridgeport Brass Co., Bridgeport, Conn., have been named to fill vacancies on the board of directors of the Brass company. **M. K. Schnurr**, comptroller since November, 1945, has been named a vice president of the firm. Mr. Zender joined the company in 1936, and has been a vice president since November, 1944.

BERNARD L. BRAY

—o—

Dr. William T. Griffiths, chairman and managing director, Mond Nickel Co. Ltd., and a vice president of its parent company, International Nickel Co. of Canada Ltd., Copper Cliffs, Ont., has been knighted by **King George.** Knighthood was bestowed upon him in recognition of his public services, particularly during the war, when he was a metallurgical consultant to the British Services and Production Ministries, and a member of several metallurgical, research and materials committees. He joined the Mond company in 1926.

—o—

Herman H. Smith, formerly president of Radio Essentials Inc., Mt. Vernon, N. Y., has severed his connection with that company and will form his own organization, Herman H. Smith Inc.

—o—

Clare R. Metcalf has been named secretary, Oster Mfg. Co., Cleveland. Mr. Metcalf joined the company in 1912, and was recently assistant sales manager.

—o—

Melvin Shaulis has been appointed assistant superintendent, Brier Hill blooming and round mills, Youngstown Sheet & Tube Co., Youngstown. Mr. Shaulis joined the company in the Brier Hill Sheet mill in 1933, and had been general foreman of the conditioning yard and sheet mill since 1942.

—o—

V. G. Schwenke has been appointed service manager, Ditzler Color Division, Pittsburgh Plate Glass Co., Pittsburgh. For the last 10 years, he had been associated with the division as a service engineer.

—o—

Richard G. Croft has been elected a member of the board of directors, Harbison-Walker Refractories Co., Pittsburgh. Mr. Croft originally became a director of the company in 1937, but resigned to enter the service in 1941.

—o—

Dr. William F. Tuley, formerly assistant general sales manager, Naugatuck Chemical Division, has been appointed operations manager, Synthetic Rubber Division, United States Rubber Co., New York. He will supervise production, production schedules and production costs of the three synthetic rubber plants operated by the company, and will maintain close contact with the company's

JOHN E. LYNCH

Named manager, New York office, Cincinnatti Milling & Grinding Machines Inc., Cincinnatti, noted in STEEL, July 29 issue, p. 68.

CARL M. BEACH

Who has been named manager, Detroit office, Cincinnati Milling & Grinding Machines Inc., Cincinnati, noted in STEEL, July 29 issue, p. 68.

F. E. BLIVEN

Named material handling engineer, General Electric Co., Schenectady, N. Y., noted in STEEL, July 29 issue, p. 68.

synthetic rubber research and development program. Dr. Tuley joined the general laboratories of the company at Passaic, N. J., in 1928 as a research chemist. He had been assistant general sales manager for the Naugatuck Chemical Division since June, 1945.

—o—

George T. Rea has been elected secretary-treasurer, Perfect Circle Co., Hagerstown, Ind., succeeding the late **Leslie B. Davis.** Mr. Rea joined the company in 1931, and had been controller since 1942.

—o—

S. Floyd Stewart has been elected to the board of directors, Leece-Neville Co., Cleveland, filling a vacancy created by the resignation of **Van Grant.** Mr. Stewart joined the company 10 years ago, and has been vice president in charge of engineering since December, 1945.

—o—

William J. Kerr and **Norbert C. Rubin** have been elected by Yoder Co., Cleveland, to fill two new vice presidencies created by the board of directors. Mr Kerr has been named vice president in charge of production, and Mr. Rubin vice president in charge of sales. Mr. Kerr has been with the company 10 years, and had formerly been factory manager. Mr. Rubin had been sales manager of the company.

—o—

Peter L. Smith, superintendent of maintenance, Winchester Repeating Arms Co., New Haven, Conn., a division of Olin Industries Inc., has retired after 42 years of service. He joined the company in 1902, and became superintendent of power in 1918. In 1924, when power and maintenance departments were combined, he became head of both.

—o—

R. H. Hoge has been elected vice president, Clark Controller Co., Cleveland. **H. P. Ladds,** president, National Screw & Mfg. Co., Cleveland, has been elected a member of the board of the Clark company.

—o—

Harry H. Williams has been appointed manager of advertising service, B. F. Goodrich Co., Akron. He has been with the company three years.

OBITUARIES . . . .

Gustave W. Forsberg, 65, Washington industrialist, died recently at his home in that city. He owned and operated the machine and foundry works in Washington that bear his name.

—o—

Joseph Rice, president, Elevator Mfg. Co. of America, Chicago, died July 27 in that city. He had been associated with the elevator business more than 50 years and held a number of patents on elevator improvements.

—o—

Anson K. Bradley, associated with Morgan Construction Co., Worcester, Mass., since 1906, died recently.

—o—

Joseph L. Overlock, 48, vice president, Continental Illinois National Bank & Trust Co., Chicago, at one time treasurer, Studebaker Corp., South Bend, Ind., and during the early part of the war Chicago regional chief of the War Production Board, died in Chicago, July 22. In 1941 he was appointed an assistant director, Priorities Division, Office of Production Management, Washington.

—o—

A. E. Lindberg, chief engineer until his retirement in 1944, Moline Tool Co., Moline, Ill., died recently. He joined the company in 1910, and was chief engineer for 25 years.

—o—

Ross M. Blackburn, 64, Chicago district sales manager, Buda Co., Harvey, Ill., died July 25 in Chicago. For many years Mr. Blackburn was an officer of the Chicago & North Western Railroad. He was president of the Track Supply Association, Chicago, and secretary of the Railway Maintenance of Way Association.

—o—

R. Elliott Maxwell, 57, former Pittsburgh steel industry executive, died at his summer home in East Hampton, Long Island, N. Y., July 27. He had been associated with Carnegie-Illinois Steel Corp., Pittsburgh, for 18 years. Five years ago he became vice president in charge of the Export Division, New York, Whiting Corp., Harvey, Ill. In 1944 he organized and headed his own export-import firm.

—o—

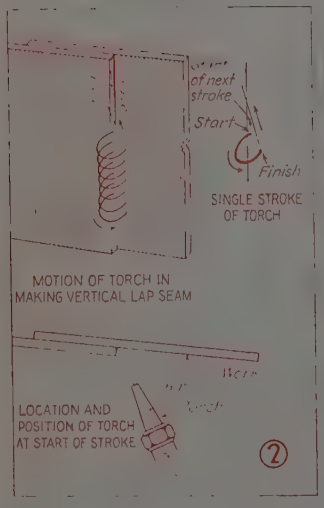
Carlos Dorticos, retired transportation specialist, General Electric Co., Schenectady, N. Y., died in Portland, Me., July 25. He joined G.E. in 1900, at Boston, and in 1909 became associated with the Chicago staff as a salesman for the supply department. In 1912, he was transferred to the railway department, now known as the Transportation Divisions, where he served as a specialist until his retirement last February.

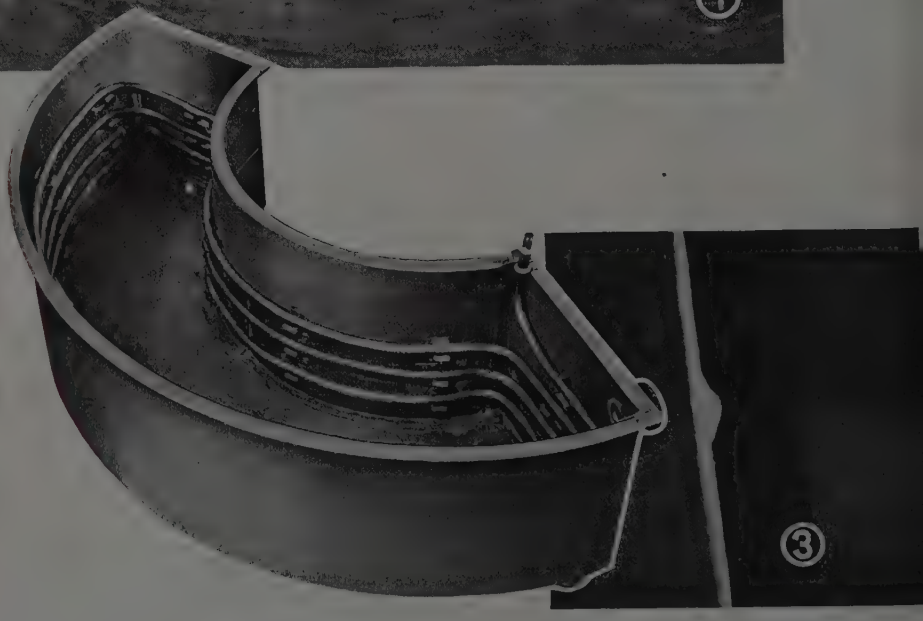
—o—

Ellsworth Marshall Rust, 67, vice president, Rust engineering Co., Pittsburgh, died at his home in Leesburg, Va., July 24.

LEAD

①


of next stroke
Start
Finish
SINGLE STROKE OF TORCH
MOTION OF TORCH IN MAKING VERTICAL LAP SEAM
LOCATION AND POSITION OF TORCH AT START OF STROKE
②



③

WELDING

By ROBERT L. ZIEGFELD
And
DAVID M. BORCINA
Lead Industries Association
New York

In this delicate method of joining lead to lead, the authors point out latest operator techniques, how to make the most satisfactory types of joints and their applications

LEAD welding in crude form dates back many centuries. Samples of Roman lead pipe are extant today which were made from cast sheets rolled up into pipe form and closed with a longitudinal joint. This joint appears to be welded by packing a sand mold around it and pouring hot molten lead in to fuse with the edges of the lead. Joints between the lengths of the Roman pipe appear to have been made in the same manner.

Records show that lead was used in England as early as 1746 in sulphuric acid plant construction. No doubt lead welding was employed to make the joints in the sheets of lead. This was probably done with an ordinary mouth blow pipe, a tedious, slow and skillful operation.

Next major development in lead welding probably came in 1837 with the advent of hydrogen gas made by the action of sulphuric acid on zinc. It was used in combination with air in a blowpipe invented by a Frenchman, de Richemont. In 1895 a combination of coal gas and air came into use.

Lead welding received its big impetus in 1905 when hydrogen became available in cylinders under pressure. Today the oxy-hydrogen method is most popular among lead welders, with oxy-acetylene, oxygen, city gas and other combinations also being employed. Oxy-hydrogen is generally considered the cleanest combination to use. It leaves no carbon deposit which might result in galvanic corrosion.

Lead welding currently is expanding into many industries that never used it before, and its use in industries accustomed to it is becoming even greater. For example, the storage battery industry, which employed this joining method for years in connecting plates and terminals is now operating at its highest rate in history. Pickling and plating operations occur in thousands of plants. These require the use of tanks and other vessels that are joined by lead welding in fabrication due to the corrosive action of the chemicals used in them. Lead is used to handle many chemicals other than those for the above mentioned operations. Some of these, along with their behavior data toward lead, are listed in the accompanying tabulation.

This method of joining was given another boost during the war. The tin shortage resulted in an inadequate supply of solder. Consequently, some industries, such as the plumbing industry, turned to lead joining. Lead welding also was employed widely in shipyards for lining battery and refrigerator rooms. Some of the yards, in addition, found it necessary to establish special classes to train men in this art. In the metal industries, expanded use of industrial x-ray equipment resulted in the use of large amounts of lead for walls, floors, etc. in setting up the x-ray installations.

Until recently, lead welding often was called lead "burning". This really is a misnomer since actual burning of the lead is to be avoided if the weld is to be successful. The operation is true autogenous welding which joins two pieces of lead without the addition of any foreign metal.

In welding lead no flux is used. Only preparatory work necessary is that the metal which is to become a part of the joint be scrupulously cleaned by shaving or wire brushing. Inasmuch as lead melts at the comparatively low temperature of 621° F (327° C.) only the smallest welding torch tips is employed. For weights of lead up to 6 lb per square foot (3/32-in. thick) tip sizes 00, 0 and 1 are preferred. For weights between 6 and 10 lb per square foot (5/32-in. thick) tip sizes 2 and 3 are satisfactorily used; above that weight larger tip sizes may be be employed. Size of tips used vary somewhat depending

Fig. 1—Lead welding operators at work on lead lining of cylindrical tank used for purifying tallow with sulphuric acid. Bottom end of lead sidewall is turned onto lead base and welding of joint is done on the flat bottom surface

Fig. 2—Drawing showing motion and position of torch in welding vertical seams

Fig. 3—Right, sectional view of horizontal joint in vertical lead sheets prepared for welding. At left is finished joint. Note fusion to entire depth of joint. Photo at left shows lead-lined steel pickling tank shaped to fit work it is to handle. Heating coil is of lead pipe on lead hangers. All joints lead welded

Fig. 4—Partly made lapped vertical joint in sheet lead showing how lead from top sheet is used to form bead

on the operator's preference. Where better control of the fusing metal is necessary, on vertical and overhead work, for example, smaller tip sizes than otherwise would be employed on the same weight lead are used.

Lead welding also is a very delicate operation compared to the welding of other metals. This is due to the danger of burning clear through the lead if the flame is held in one position too long. Thus, the flame is in contact with the lead only at short intervals. Even then it is constantly being moved. Manipulation of the torch depends on the type of joint being welded, and the horizontal, vertical or overhead position of the seam. In general, a semi-circular or V-shaped motion is used. The molten lead is controlled and flowed with the flame, thus accounting for the circular or herringbone appearance of the joint. Each semicircle or V is made in one continuous operation, the flame being flicked away from the work at its completion.

Lap joints, usually made with a lap of ½ to 1 in., are preferred except when very heavy lead is being welded. In the latter case butt joints are used. When this joint is employed, it is necessary to bevel the edge of each of the lead sheets being joined to approximately a 30 degree angle with each other. This makes it possible for the welder to bond the sheets easily throughout the entire depth of the joint. A lead filler rod must be used constantly and several passes are often necessary to build up the joint to the desired thickness. With lap joints the lap itself serves as a filler and the filler rod is applied only occasionally.

Filler rods having the same composition as the lead being joined must be used. However, their diameters can vary between ⅛ and ⅜-in., depending on the thickness of the lead and preference of the welder. On butt joints, a rough rule of thumb to use for the consumption of filler rod for a single pass is 1 ft of rod to 1 ft of joint when ¼-in. rod and 8 lb lead are employed. There are slightly over 4 ft of ¼-in. rod per pound. A suggested formula for welding speed is:

$$\frac{V = \text{welding speed, ft/hr.}}{T}$$

where T = lead thickness, in.
V = welding speed, ft./hr.

Wherever possible welding of joints in lead should be made in a horizontal position. In tank lining work, however, it is often necessary to weld horizontal and vertical seams in a vertical position. Horizontal seams on vertical surfaces are comparatively simple and are made by lapping the lower sheet over the upper, the lower edge preventing the molten lead from running away. Vertical seams are more difficult and lap joints are almost always used. The lead sheets are held in position usually with wooden forms and welding begins at the bottom of the joint. The flame is applied to the lead at the junction of the upper and lower sheets. When the edge of the upper sheet becomes molten, the flame is carried, with a circular downward motion, back into the top sheet completely liquefying the overlap. Then the flame is carried almost horizontally over the underlapping sheet fusing the upper and lower sheets together. There are some instances where butt joints are used in vertical work, but this is more of a molding operation performed with molds held in place and lead melted into and fused with the joint by applying the flame in the mold.

Overhead welding is a very difficult operation and can be done only by especially skilled workers. Such joints are to be avoided whenever possible for many reasons—primarily because the joints cannot be made as strong as horizontal or vertical joints.

Welding of lead pipe is done in the same manner as sheet with the same preference shown the lap joint. The female end of the pipe is flared and cleaned inside and out. The male end is beveled to conform with the flare in the female end. It also is cleaned either by a wire brush or by a shave hook.

In all cleaning operations, it is only necessary to prepare that part of the lead that is to become an integral part of the joint. This method of preparing the pipe is best suited when it is possible to roll the pipe so that the welding operation can be performed in a horizontal position around its entire circumference.

When it is not possible to roll the joint the above method of joint preparation may also be used. This, however, requires a certain amount of overhead

(*Please turn to Page* 162)

Fig. 5—Welding conical-shaped bottom of a lead-lined Foamite tank. Tools needed for work are shown alongside worker. These consist of a shave hook, wooden dressers for dressing down lead, hammers, and lead welding rods. Also included is a flapper of sheet lead for smoothing out lead lining

Fig. 6—Lead pan with welded lap joints being installed on second floor of a plating shop to protect concrete from spillage of corrosive acids

ENGINEERING NEWS at a glance

JUST as a doctor examines the human body and interprets disturbances brought to him by his stethoscope, so can an engineer determine "ailments" of a steam turbine by means of a resonance tube. At Pittsburgh, Westinghouse engineers use a rather simple formula in "doctoring" running steam turbines. They combine past experience with a resonance tube. The latter is simply a hollow plunger fitted into a sleeve, and varying in size from 3 to 60 in. The tube is used to locate discordant sounds in the whirling turbine by "tuning in" to the sound's frequency. This is done by extending or retracting the plunger, for at any one position only one frequency is heard. By measuring length of tube at the position noise is heard, frequency is determined. Then dividing known velocity of sound by frequency the wavelength of the noise is determined. As wavelengths of "trouble sounds" are already pre-computed and charted, the particular fault of the machine tested is revealed by comparing the determined wavelength with the chart.

METAL temperatures are measured below the surface of the bath in a matter of seconds with a new portable thermocouple developed recently by Brown Instrument Co., and soon to be introduced on the market. According to the Philadelphia concern, the development measures molten aluminum temperatures, and is regarded as suitable for measuring lead, babbit, zinc and similar low temperature melting metals. Its readings are unaffected by couple wire conditions and parasitic current generation is wholly absent at the hot junction.

SOLAR energy is a universal source of power, provided heat stored in sunlight is properly concentrated and used on an industrial scale. After prolonged experiments conducted by the Spanish scientist Federiko Molero, now in Russia, an apparatus was built to convert solar energy into steam in quantities sufficient for use in canning and chemical plants, it was learned through "Russian Research News", New York. The solar heat boiler, with an estimated capacity of 260 lb of steam per hour, is mounted above a parabolic reflector about 33 ft wide, which collects and concentrates the sun's rays. Molero, with similar apparatus, also smelted metals.

MINIATURE ocean in which ships' gear remains stationary while water is forced past it, is helping the Navy uncover new design secrets to improve performance of its combatant ships. Latest test unit of the David W. Taylor model basin, Washington, sends 750,000 gallons of water coursing through an upright circular aqueduct, and drives it against the scale models in a reverse simulation of real equipment plowing its way through the ocean. The 2800 tons of water in the channel is circulated by two huge Westinghouse motors at speeds as high as 12 mph. The surface of the water is kept flat to permit visibility of under-currents, and naval engineers can watch turbulence from beneath or from either side through plate glass.

RESULTS of temperature rise tests, plotted with temperature, degrees centigrade against time-seconds, reveals the safe operating region for insulated aircraft wires and cables, B. W. Jones and J. A. Scott of General Electric, told members of the AIEE in a recent meeting in Detroit. Current-time-temperature tests on wires, carried to the point at which smoke first appears, provide a suitable method of determining the short-time current-carrying characteristics. Measurements must be carefully made, however, the speakers emphasized, with wire temperatures being determined by copper resistance, and using a volt-ammeter for times down to 5 sec, and oscillograph methods or thermal calculation for shorter times.

CRITICAL supply of enameling sheets in the porcelain enameling industry is forcing plant managers to turn to other grades of steel. In using these grades, it is found the sheets may not run uniform from lot to lot or even from sheet to sheet. In suggesting what the enameler can do to help himself, the *Enamelist*, Cleveland, recommends enameling superintendents be permitted to pretest enameling qualities of incoming shipments of steel, and advise concerning their fabrication for articles to be enameled. If warpage, or if flatness of surface of finished product is important, sagging tests can be made, and steel having bad warping characteristics segregated for less important items. Some types of non-enameling grades of steel can be enameled with fairly good results if pickling time is drastically reduced, others if pickling time is doubled or tripled. It also is recommended that a closely controlled nickel dip process be used in conjunction with pickling practices.

FULL tank forms the handle of the torch embodied in a combination gasoline blow torch and soldering iron developed by the Germans, according to the Army engineering board in describing the development for the Department of Commerce, Washington. Burner head is of common design with the pump located inside the tank. Soldering copper is fastened to the top of the torch and held in the torch flame. A sheet metal guard is used to concentrate the heat on the copper. In soldering, bulk of the burner is a slight handicap, but the tool is well balanced. Without soldering attachment, the tool becomes a good blow torch with a fuel capacity of ½ pint.

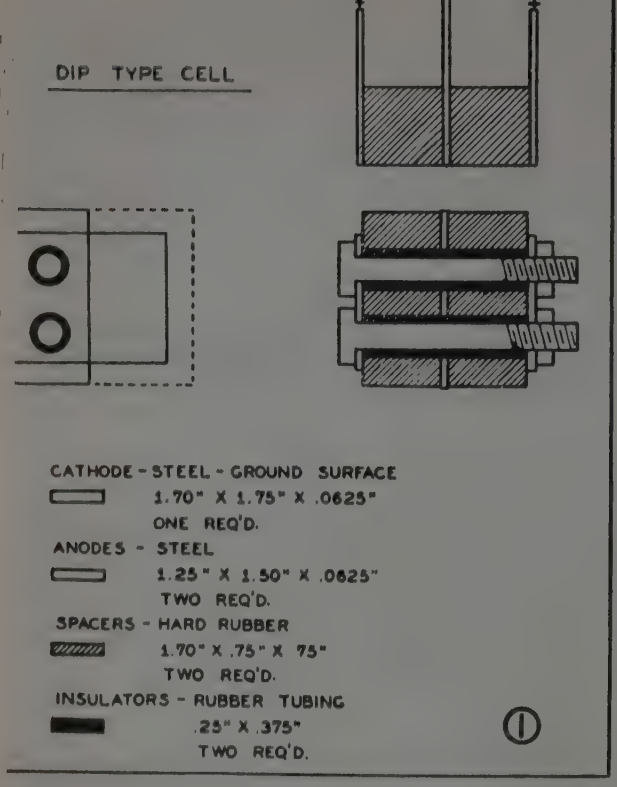
EMPLOYING small quantities of water under conditions which permit its retention and control, the cartridge type desuperheater being produced by Elliott Co., Jeannette, Pa., delivers substantially dry saturated steam at the outlet nozzle. Where partial desuperheating is desired it delivers under automatic control steam desuperheated to any definite temperature desired, not less than the saturated steam temperature, and maintains that temperature within several degrees.

LESS power is required when using, on milling jobs, an inserted tooth carbide cutter being produced by Wendt-Sonis Co., Hannibal, Mo. In addition, blades of the cutter, the company reports, are interchangeable, and a special type wedge prevents them from slipping out while cutter is in operation. Development is readily adaptable to standard machinery.

Analysis of

ALL production men dealing with electroplated coatings, particularly on steel products, will agree that the proper application of a metal strike in the electroplating process is an important step in obtaining good adhesion between the base metal and electroplate, thus contributing materially to acceptability of entire coating.

Strike is usually operated at low cathode efficiency so that copious evolution of hydrogen will surface-clean work prior to plating. Since this is one of the principal functions of a metal strike, analysis and control of this property of strike solution becomes an important factor in production plating. In general, standard methods of coulometer control of cathode efficiency are not adaptable for simple strike solution control. Cathode efficiency of the strike bath depends very much upon temperature, current density, and bath composition.



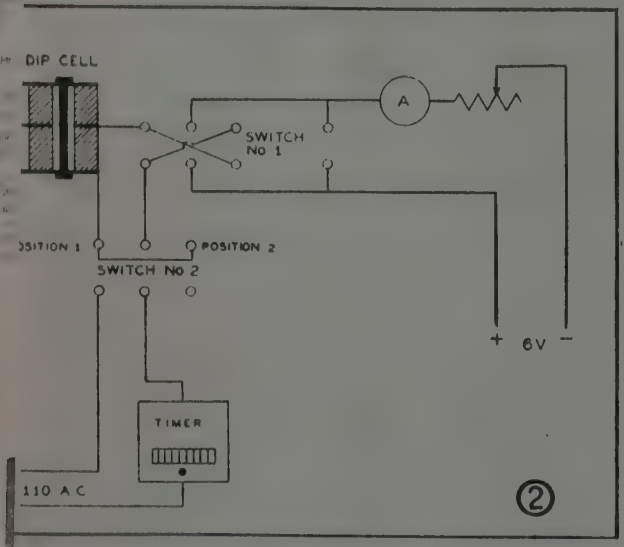


Fig. 1—Cross-section and plan view of dip-type cell used in electrolytic analysis of strike solutions

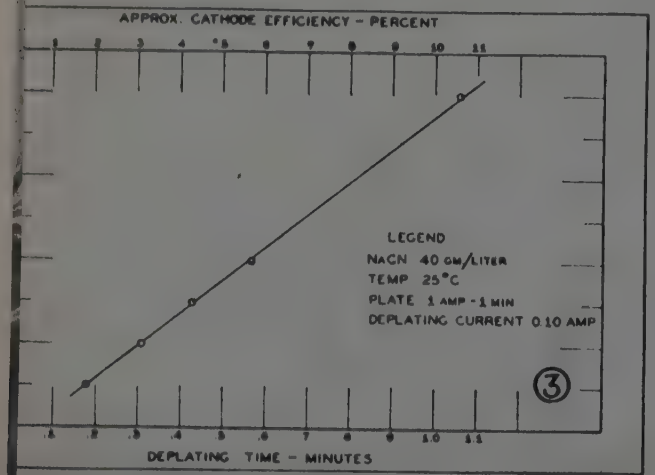
Fig. 2—Electric circuit for electrolytic cell apparatus. Fig. 8 is photograph of apparatus

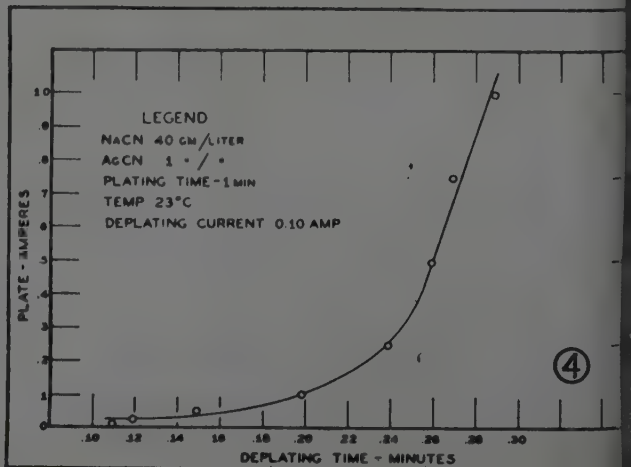
Fig. 3—Plot showing silver cyanide content of bath versus deplating time in minutes

Fig. 4—Plot showing plating current versus deplating time in silver cyanide strike bath

Fig. 5—Variation of deplating time with various concentrations of free cyanide and of copper cyanide in the bath

Fig. 6—Plating rate of copper cyanide strike bath as influenced by operating temperature





Electroplating "STRIKE" SOLUTIONS

Low efficiency strike solution is important for adherence of electroplates, particularly on steel products. New method of routine production control is described

A rapid method of determining approximate cathode current efficiency of silver and copper strike baths employing a new electrolytic cell was described by R. A. Schaffer and J. B. Mohler at regular fall meeting of the Electrodeposition Division of Electrochemical Society, held in New York city in October, 1945. Method is based on the fact that the amount of metal deposited on a test specimen from a strike solution is proportional to the time at constant temperature and constant current density. This quantity of metal may be determined by measuring deplating time, where a sudden drop in current marks the end point, which is in many respects analogous to everyday production use of electrolytic thickness measurements.

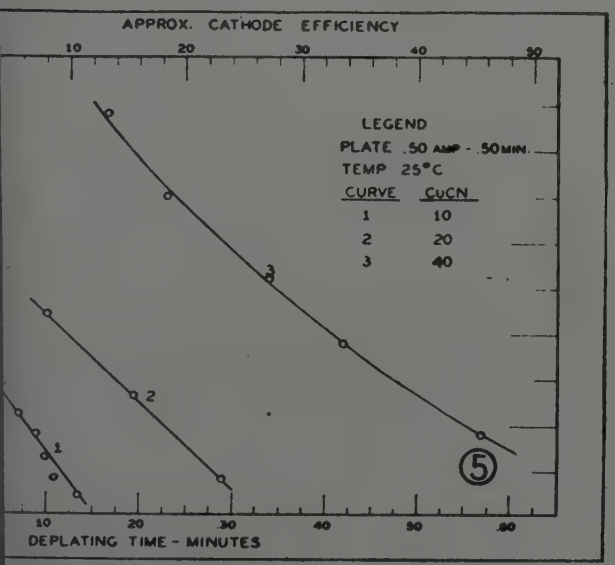
Apparatus: Apparatus used consists of a dip-type cell constructed similar to a conductance cell except that three electrodes were used instead of the conventional two electrodes. Most satisfactory material found for electrode construction was SAE-1010 cold-rolled steel. Cross section and details of cell used are shown in Fig. 1. Fig. 7 shows a close-up view of dip-cell.

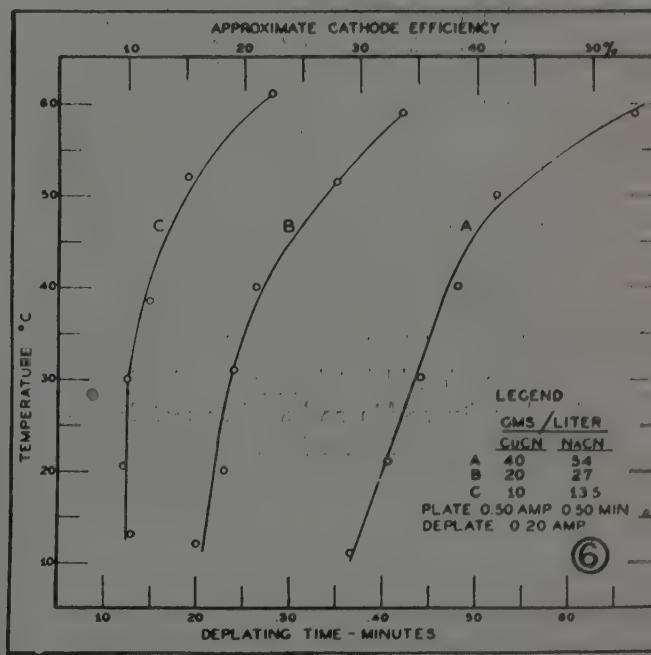
For convenience in production use, an instrument box was devised containing a rheostat, an ammeter, a reversing switch, and a short-circuiting switch. Complete electrical circuit required is shown in Fig. 2. Adequate insulation of wires leading to electrodes of dip-cell is a very important item because any current leaks in this high current density area will lead to error. The complete assembled apparatus is shown in Fig. 8.

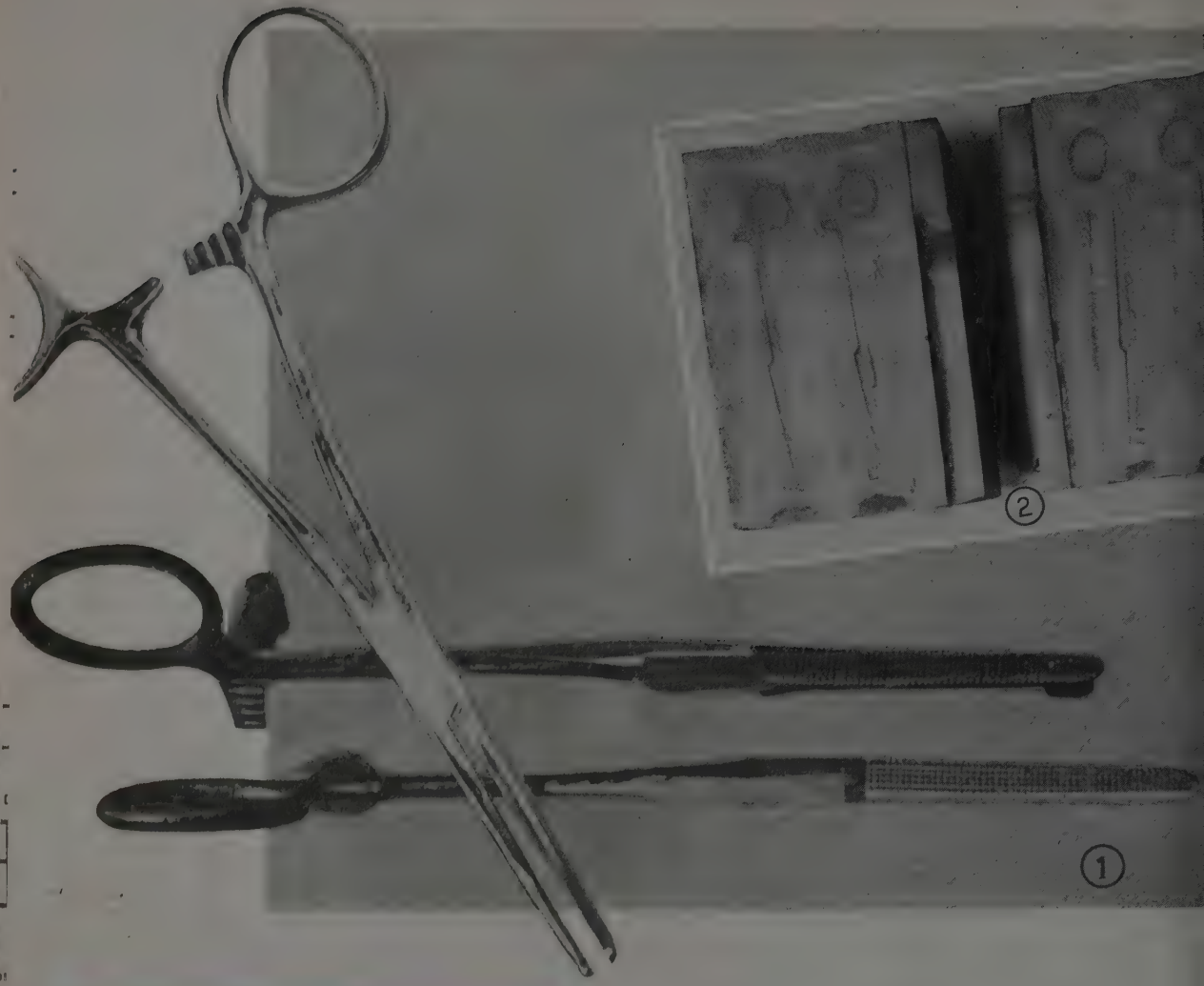
Silver Cyanide Strike Solutions: Sodium salts, cyanide, and carbonate, are used almost universally for silver strike solutions. A common strike solution[1] for base metals other than steel contains 3 to 4.5 grams per liter (0.4-0.6 troy ounces per gallon) of silver as a metal, 60 to 90 grams per liter (8 to 12 ounces per gallon) of free sodium cyanide, and 8 to 30 grams per liter (1 to 4 ounces per gallon) of sodium carbonate.

In plating steel directly with silver a first strike is generally used, such as ¾ to 1½ grams per liter (0.1 to 0.2 troy ounces per gallon) of silver and 60 to 150 grams per liter (1 to 4 ounces per gallon) of free sodium cyanide. The combined effect of reducing the silver concentration of the first strike formula and of increasing the free cyanide is to decrease the silver ion concentration to an extremely low value to insure adhesion of the deposition steel.

Conclusion reached from work done at Bureau of Standards[2] on coatings of silver on steel was that with very careful control of bath conditions, particularly from point of view of floating impurities, and with carefully prepared base metal surfaces a fairly good degree of non-porosity base metal surfaces, a fairly good degree of non-porosity could be obtained in conjunction with a plate thickness of approximately 0.0002-in. (*Please turn to Page* 141)







Manufacture of Surgical Instruments

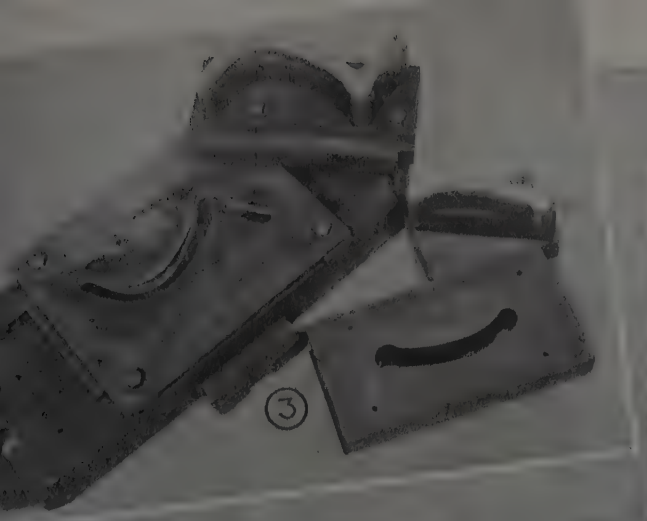
Stainless steel basic material for production process with odd but happy combination of hand craftsmanship and modern metalworking methods

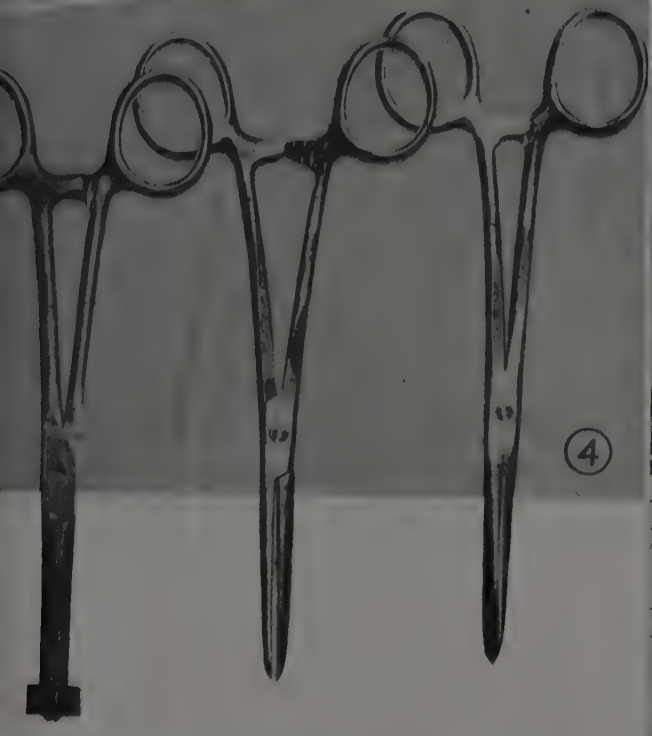
By FLOYD McKNIGHT
And JOSEPH G. COWLEY

LITTLE has been said in the past about the surgical instrument industry, its uses of metals and methods of manufacture, yet it is almost unique in combining modern machining and heat treating methods with the hand craftsmanship of metal artisans. From the standpoint of its needs, the industry is very dependent upon stainless and alloy steels, and drop forging, annealing and pickling play equally important parts with machining and bench work in producing these delicate instruments.

Surgical instrument manufacturers keep on hand literally thousands of dies. Fred Haslam & Co., Brooklyn, N. Y., in business since 1848, uses as many as 85 to 90 dies on certain specific jobs. The number rises even higher when different size forceps are required for certain sets. With few exceptions, finished instruments are produced almost wholly by forging from dies on hand.

The following steps are taken in the production of forceps and scissors: Drop forging, machining, milling, filling, trimming, grinding and finishing. To enable one to understand (*Please turn to Page* 170)





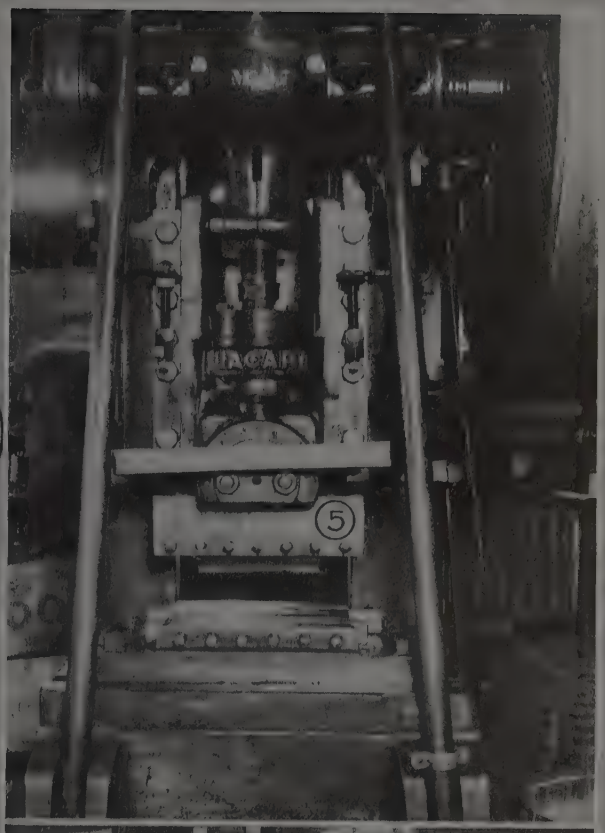


Fig. 1—Serrations cut into jaw of forceps section; also milled single joint and finished forceps

Fig. 2—Top and bottom halves of forging dies used in making Rochester artery forceps

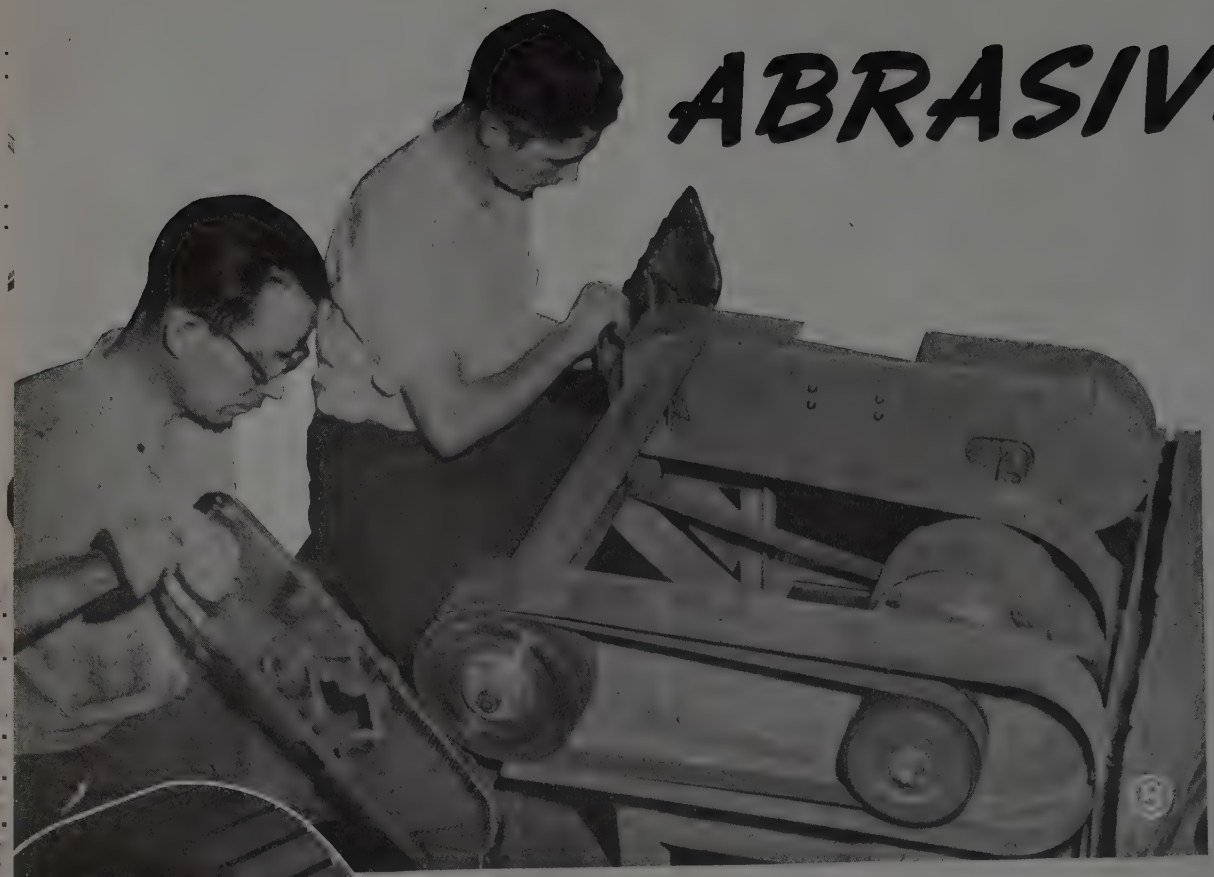
Fig. 3—O'Sullivan abdominal retractor dies used in the Niagara A3½ trimming press

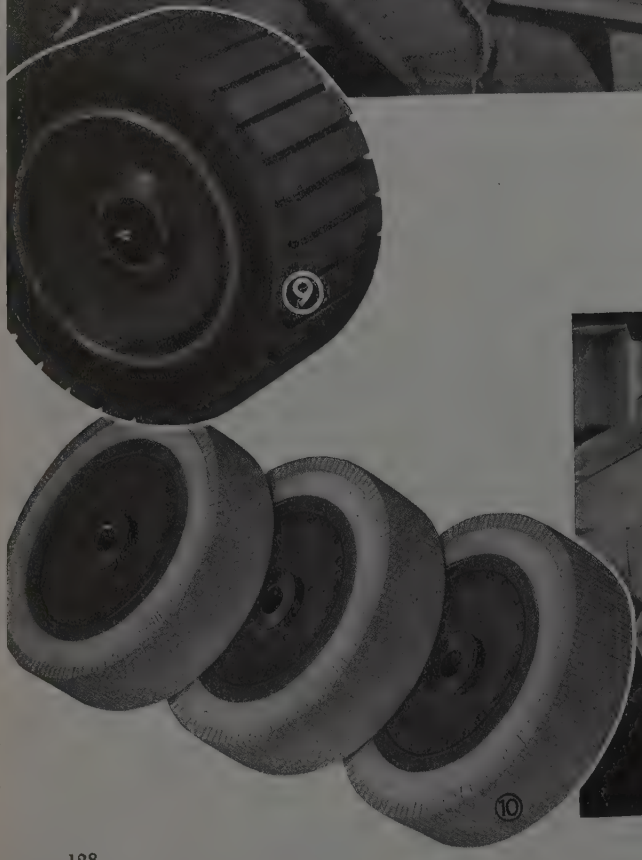
Fig. 4—Assembled forceps, before and after riveting. Left, assembled and drilled forceps; center, same forceps riveted and ground to shape; right, forceps curved and set

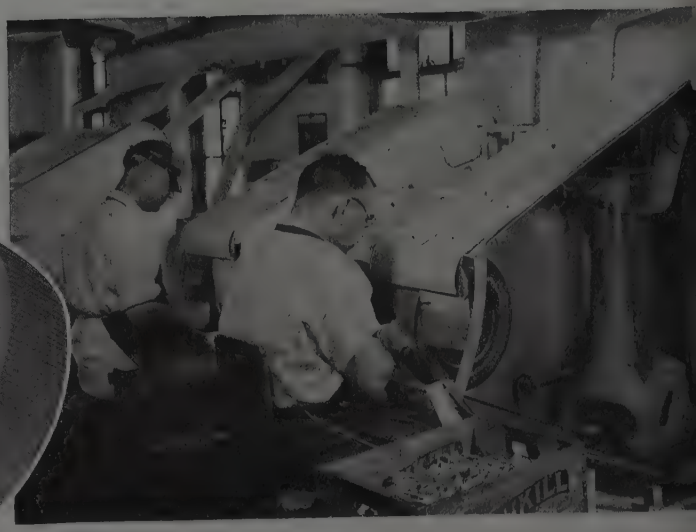
Fig. 5—Niagara A3½ press with dies in place

Fig. 6—Drop forging hammer with heating furnace on the right. Hammer is operated by long wooden pedal shown near base

ABRASIVE







Several types of machines utilizing this process are becoming increasingly popular in many industrial plants. Various applications are covered in this second of two articles

Belt GRINDING

OF THE development work done by the engineers of Minnesota Mining & Mfg. Co., St. Paul, Minn., not all was directed toward progress in grinding and finishing of metal stock. Much experimental designing and testing was being done in co-operation with machinery builders and industrial firms to develop more satisfactory methods of grinding and finishing fabricated parts.

Out of this co-operative research came what is recognized, today, as the outstanding method of grinding and finishing metal surfaces—the backstand method.

A backstand is essentially an adjustable idler pulley used to support and tension the belt driven by the contact roll of the grinding and polishing lathe. An adjustment provision provides for correct belt tension and also permits steering the belt so it runs in proper position on the work or contact wheel.

Note in Fig. 14 the method for adjusting belt tension by tilting the backstand. The idler axis is changed by the rod extending forward to the handwheel just under the work wheel. A variation of this arrangement mounts the work and idler wheels on a common frame of welded structural steel, and belt tension is adjusted by sliding the idler support on the framework.

In Fig. 11 yet another construction is employed. Instead of a single idler, two idlers are used with the belt so the belt travels three sides of a triangle. The two-pulley backstand was developed to obtain efficient belt length where floor space is limited.

The idea of using an endless factory coated abrasive belt with a backstand, a grinding and polishing lathe and a contact wheel to replace glue and grain setup wheels is not new. Prior to 1934, however, the results were not completely satisfactory.

Segment Face Contact Wheel: Up to that time the use of the backstand method was limited to light grinding and finishing softer metals such as brass, bronze, aluminum or mild steel. The contact or work wheel was selected from those available such as standard sewed buffs, compress canvas or rubber-covered wheels. These wheels were not designed to take full advantage of the cutting power and efficiency of factory-coated abrasive belts. When used in grinding and polishing harder metals, production was low and abrasive belt performance only partially satisfactory. As a result the use of factory-coated abrasive belts in comparison with setup wheels was negligible on the part of industry.

In the initial study it was recognized that soft wheels, permitting the belt to follow the contour of the piece, failed to back up the abrasive and produce the required rapid cut and long belt life. Hard wheels increased the

Fig. 8—Bench type backstand grinders such as these provide a fast cutting, smooth running method of grinding and finishing a wide variety of flat and curved surfaces

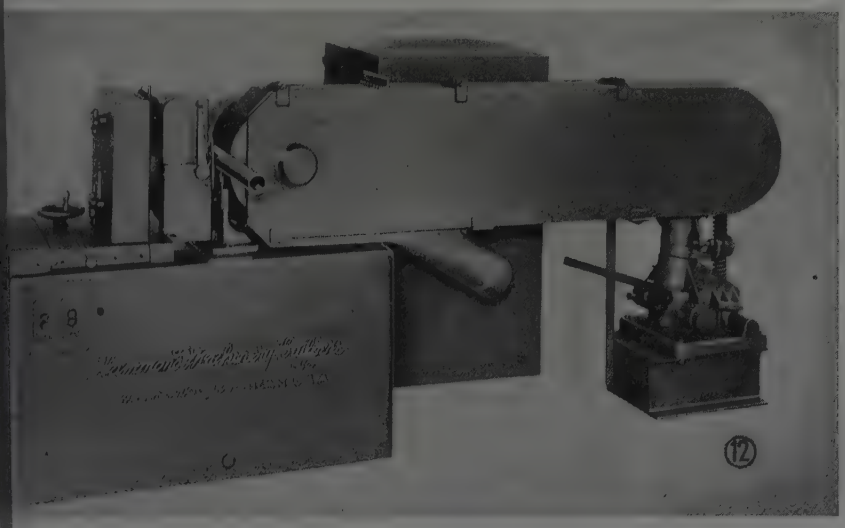


Fig. 9—Dual density rubber segment face contact wheel

Fig. 10—Segment face contact wheels like these are manufactured in three types: Type B for maximum contour, type H for average contour and type R for minimum contour

Fig. 11—Another type of backstand setup using two rear idlers to give maximum belt length in limited space

Fig. 12—Special abrasive belt grinder developed for finishing outside diameter of rods and tubes

rate of cut but would not follow the contour of the piece. They ground the "hills" but would not reach the "valleys." It became evident that the need was for a wheel combining the features of a soft and a hard wheel.

One of the first attempts to improve performance involved a wheel with a soft core and harder outer surface, the face of which was slotted on a milling machine. Surprisingly enough, when tested against a conventional wheel, this gave a 50 per cent increase in production and 30 per cent greater belt life.

The resulting finish, however, left much to be desired. Following this, a dual density rubber wheel with molded slots was made. This gave just as high production and a far better finish. Major objection was that air, entering the ends of the slots, resulted in a whistle.

Continued experimentation between 1936 and 1939 along these lines resulted in developing the line of dual density segment face contact wheels of two types, one of cloth and another of rubber. These wheels set remarkable records for grinding and polishing operations on some of the toughest jobs in industry.

On many jobs both grinding and polishing were done as a single operation, using segment face contact wheels and improved abrasive belts.

Three types of cloth wheels are now being made (Fig. 10) using a soft yielding layer of material at the center with a hard segmented outer face. The cushion center permits each segment of the face to work independently. In that way each individual segment aligns itself and its portion of the abrasive belt to the contour of the work surface.

The different sizes and arrangements of the segments afford special characteristics to each type of wheel. Wheels with smallest segments and soft cloth center afford more floating action and enable the abrasive belt to follow maximum contours. These type B wheels are known as soft wheels.

Type H wheels with larger segments and heavier cloth are medium wheels and are recommended for average contours. Hard or type R wheels employ segments that extend the full width of the wheel face. These segments have a flat surface and heavy cloth toward the center, making it suitable for work that has minimum contours or work that does not permit dumping of the edges.

The same principle of soft cushion and hard outer segmented face has been worked out in the dual density rubber segment face contact wheel (Fig. 9).

War's Increased Production: The advent of the war created demands for increased output and resulted in more and more plants turning to abrasive belt grinding and polishing. Production increased and production costs dropped.

Though there was some resistance to this innovation, it was traceable largely to an aversion toward change, particularly on the part of those who could not conceive of a factory-coated belt meeting the results obtained with setup wheels. However, the increased output received from properly selected contact wheels and factory coated belts was so thoroughly demonstrated that their acceptance was rapid and is still continuing to spread.

There are many reasons for the higher output secured from modern factory coated abrasives used with the modern equipment available today.

With factory-coated abrasives, the full profile of the abrasive mineral is presented to the work, with the result that maximum cutting is developed.

The abrasive minerals are scientifically graded and treated. They are applied to the belt surface in a uniform coating that produces finishes requiring a minimum of final polishing. Controlled factory conditions eliminate variations in coating, bonding or curing; quality is duplicated exactly from lot to lot.

The uniformity of mineral grading and coating makes it generally possible to select a full grit size coarser than with setup wheels, increasing cutting speed and maintaining equal or more uniform quality of finish.

The recent introduction of new bonds of greater strength enables factory, coated abrasive belts to retain their cut for a long period of time, even under heavy loads. Grinding heat is dissipated rapidly due to the long travel of the belt; the abrasive is kept cool, resulting in smoother cutting action.

Combine these features with the "fingering" action of the segment face wheel, which employs the full grain of the abrasive belt, eliminating glazing and which enables the abrasive to follow the contour of the piece to be ground, and

(*Please turn to Page* 176)

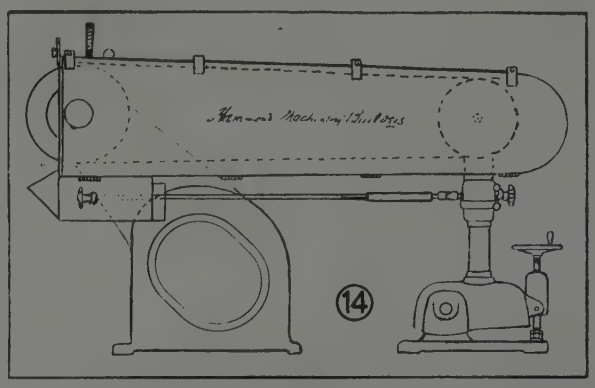


Fig. 13—*Abrasive belt swing grinders remove surface scale and imperfections, and cut down welds from four to six times faster*

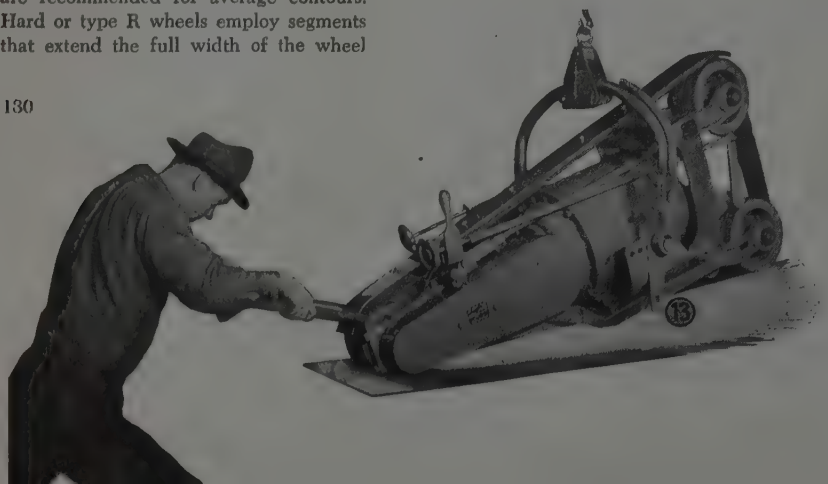
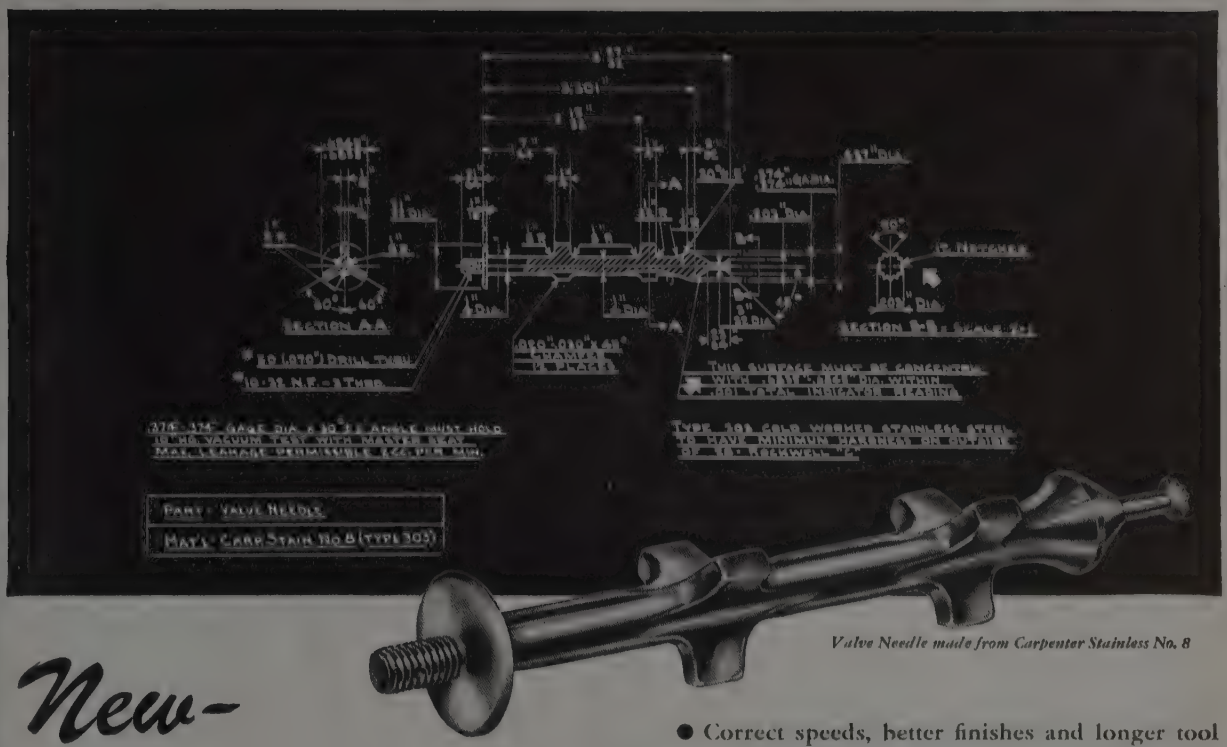


Fig. 14—*A typical floor type backstand setup showing how belt tension is adjusted*



Valve Needle made from Carpenter Stainless No. 8

New-

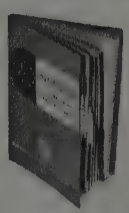
USEFUL INFORMATION *to cut costs where you* MACHINE STAINLESS STEEL!

● Correct speeds, better finishes and longer tool life on your machining jobs will lead you to a lower cost on each unit made from Stainless bar stock.

For the lower unit costs that are so important now, ask your nearby Carpenter representative for your copy of the new Carpenter "NOTEBOOK on Machining Stainless Steels". Just published, this 116-page NOTEBOOK is packed full of useful shop hints and machining information . . . much of it never before printed. For example—

COMPLETE CHECK CHARTS in each section list common trouble spots, and help you find the best cure in each case.

SPEEDS AND FEEDS recommended for various types of Stainless are given in the useful table you'll find in each chapter.



LUBRICATION AND STONING are thoroughly covered. The NOTEBOOK is a complete and up-to-date shop tool for any plant where Stainless is machined.

Your Carpenter representative will be glad to give personal copies to Production and Management executives. And if you want extra copies for the men in your plant, they can be secured at cost—50c apiece.

THE CARPENTER STEEL CO. • 139 W. BERN STREET • READING, PENNA.

Carpenter

FREE-MACHINING

STAINLESS STEELS

PROMPT SHIPMENT FROM CONVENIENTLY LOCATED STOCKS

Buffalo	Cleveland	Hartford	Philadelphia
Chicago	Dayton	Indianapolis	Providence
Cincinnati	Detroit	New York	St. Louis

SEE THE CLASSIFIED SECTION OF YOUR TELEPHONE DIRECTORY

In replacing dome-shaped roof on the railway center, 1123 sections of preformed and precurved 14-gage aluminum sheets were required to cover its 32,000 square feet. Job was completed in three and a half months

ALUMINUM ROOFING for Cincinnati's Union Terminal

UNUSUAL engineering project was the recent construction of the new 32,000 sq ft aluminum roof for the Union terminal at Cincinnati. Aluminum portion includes roofing for dome-shaped area (see Fig. 1) and two arched roofs or "barrels" covering main body of the terminal, as well as three parapet walls extending to the front of the facade.

When it became apparent that the roofing on the dome shaped area and "barrels" would need replacing, a consultation was held with the architectural division of Aluminum Co. of America to determine exact needs of the roof. Overly Mfg. Co., Greensburg, Pa., was consulted regarding possibilities of using its batten style aluminum roofing. Known as Goodwin batten, this type roofing is pre-fabricated and is simple to construct and easy to erect, and is extremely light in weight.

With the exception of the flat areas where ⅛-in. aluminum sheet was used, the entire dome-shaped roof, barrels and parapet walls were covered with 1123 sections of 14-gage type 3S-½H alloy sheet, maximum size 52 x 120 in. In addition to the pre-formed aluminum field sheets, approximately 11,500 lin ft of alloy type 53S extruded batten and cap was used.

Curved shape of the roof imposed a major structural problem. Each section of aluminum bar, batten and sheet had to be precurved to a slight degree to meet the shape of the sectional arc. Because of contour of dome-shaped area, each sheet was tapered to insure precise fitting as sections converged toward the top. This preforming and curving was done in the Overly shops prior to shipment.

Extruded battens and caps shown in Fig. 3, ranged from 6 ft 6 in. to 20 ft in

(*Please turn to Page* 149)

Fig. 1—Dome-shaped area of Union terminal at Cincinnati showing aluminum roofing job nearing completion

Fig. 2—View of small barrel showing lower section of batten, bottom sheet and start of sheet which will carry over parapet wall at right. Note scaffolding

Fig. 3—Two roof sheets, lower and upper extruded batten, anchor clip, expansion shield, two sizes of bolts and washer

FOR Specialized STEEL SERVICE

COLD FINISHED BARS... SHAFTING

Complete stock of all carbon grades in Rounds—Squares—Hexagons—Flats.

Specify GENSCO STEEL

ANNEALED AND TEMPERED SPRING STEELS

Gensco offers a complete range of sizes and grades of Annealed and Tempered Spring Steels.

COLD ROLLED STRIP STEEL

Expertly packed for safe delivery—in Coils and Straight lengths—all Gauges and Tempers.

COLD ROLLED STRIP STEEL • COILS AND STRAIGHT LENGTHS • SHEET STEEL
COLD FINISHED BARS • SHAFTING • ROUND EDGE FLAT WIRE
ROUND WIRES • TEMPERED AND ANNEALED SPRING STEEL
SHIM STEEL • FEELER GAUGE • DRILL ROD • STEEL BALLS

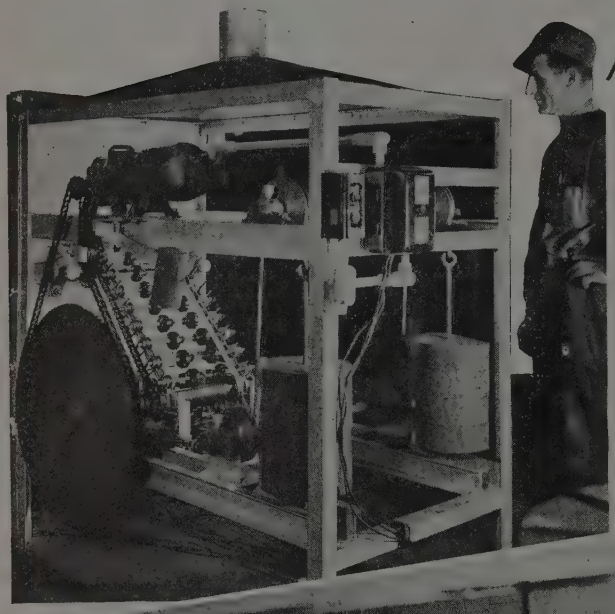
GENERAL STEEL WAREHOUSE CO., INC.

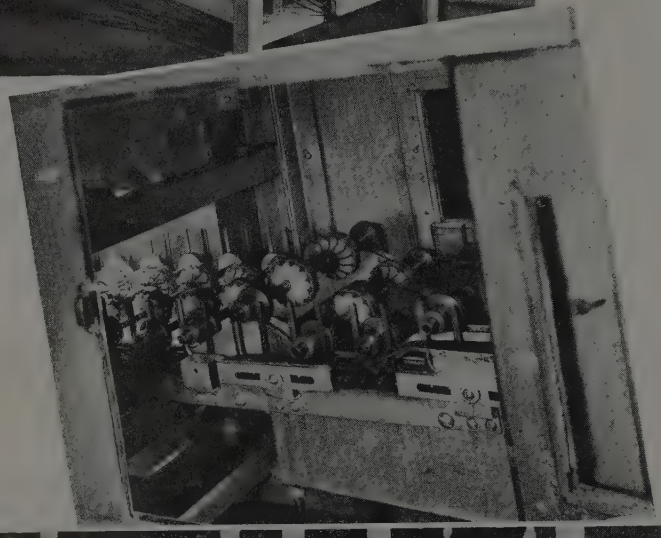
1830 N. Kostner Avenue, Chicago 39, Illinois • Belmont 4266

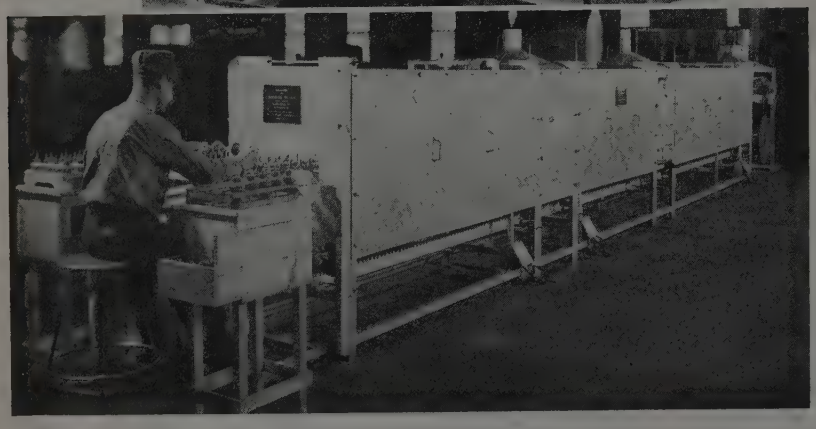
New York 17	Cincinnati 17	Milwaukee 2	St. Louis 5	Minneapolis 11
441 Lexington Ave.	56 E. Mitchell Ave.	208 E. Wisconsin Ave.	9301 Bonhomme Road	100 17th Ave., North
Vanderbilt 6-2750	Plaza 1470	Broadway 7629	Wydown 1368	Cherry 4457

New INSULATING PROCESS

provides savings up to 90 per cent







Unusual process applies insulating varnish *to armatures and stators at the rate of 200 per hour including two dips and one baking period*

APPLICATION of insulating varnish to armatures and stators with assembly-line speed and precision is now possible through use of the Zanderoll process, development of Sterling Varnish Co., Haysville, Pa., on which patents are pending.

Time-saving element in the process is one of the most revolutionary things about it, according to Blaw-Knox Co., Pittsburgh, which is constructing and installing the equipment for the process. Savings of 50 to 90 per cent have been obtained on working installations, the company reported. The machine handles 200 armatures per hour including two dips and one baking period.

The process differs from other insulating processes by being precisely designed for individual needs in the manufacture of rotors, stators, coils and kindred electrical products. It produces a surprisingly good insulation through thorough penetration, uniform distribution and a complete bake, it is said. As presently designed, the process utilizes a combination of conveyor systems, a series of dips, and the application of heat as the treated

(*Please turn to Page* 149)

Top to bottom—

Fig. 1—Exit side of oven. Armatures have been heated, dipped, baked and dried, now travel out and down. Units are cooled by the time they return to point of origin on lower track of oven

Fig. 2—Close-up view of armatures through door. Here they have been preheated and are about to enter the first dip tank

Fig. 3—Overall view of equipment used to apply insulating varnish by the process

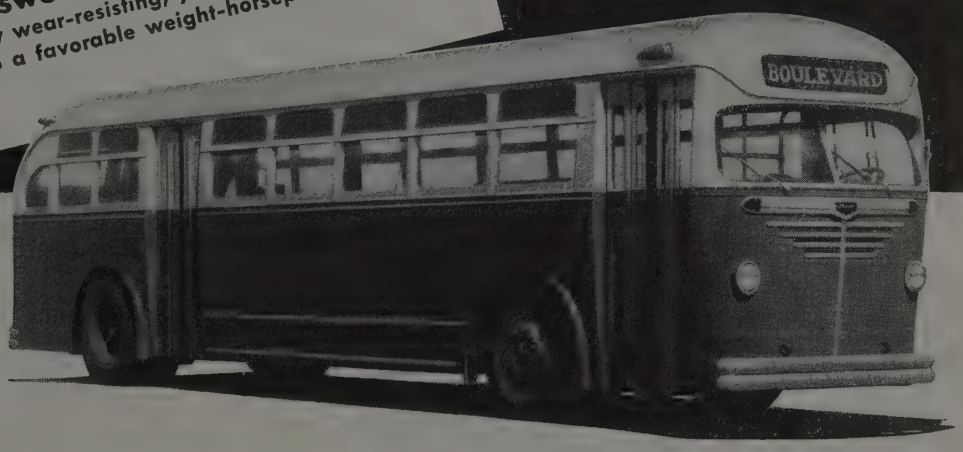
Problem ~~TROUBLE~~-SHOOTING *with* SEAMLESS STEEL TUBING

AUTOMOTIVE INDUSTRY

The Problem: To find a material for use in rear axle housings and spindles, light enough to meet designers' weight requirements, sturdy enough to withstand the severe stresses and strains to which it will be subjected in normal service.

The Answer: OSTUCO Seamless Steel Tubing, inherently wear-resisting, yet light enough to contribute to a favorable weight-horsepower ratio.

Even a Bus has a Housing Problem



The C41, newest of the complete line of Mack trucks and busses, represents an advanced conception of the modern urban motor coach. This sleek, highly efficient unit embodies numerous design and construction features, each of which contributes to more economical operation in dense city traffic.

The same research, design and manufacturing experience* that enabled The Ohio Seamless Tube Company to help solve this important structural problem has been equally effective in solving similar problems in many other industries. Complete information and a free copy of "M-1", an informative booklet on steel analyses, tolerances and machining methods, may be obtained from the nearest sales office.

** Experienced craftsmen like Colonel Mayer, shown here at the billet heating furnace, have spent years in developing the skills that have created the Ostuco tradition of quality manufacture. Mayer is a member of the Ostuco 50-Year Club.*

THE OHIO SEAMLESS TUBE COMPANY

OSTUCO SHELBY OHIO

SALES OFFICES: Chicago 6, Illinois, Civic Opera Bldg., 20 North Wacker Dr.; Cleveland 14, Ohio, 1328 Citizens' Bldg.; Detroit 2, Michigan, 2857 E. Grand Blvd.; Houston 2, Texas, 927 A M & M Bldg.; Los Angeles, Calif., Suite 200-170 So. Beverly Drive, Beverly Hills, California; Moline, Illinois, 225 Fifth Avenue Bldg.; New York 17, New York, 70 East 45th Street; Philadelphia 9, Pa., 123 S. Broad St.; St. Louis 6, Missouri, 1230 North Main St.; Seattle, Washington, 1911 Smith Tower; Syracuse, New York, 501 Roberts Ave.; Tulsa 3, Oklahoma, Refining Engine & Equipment Co., 604 Ten E. 4th St. Bldg.

● Canadian representative: Railway & Power Engineering Corp., Ltd. Hamilton, Montreal, Noranda, North Bay, Toronto, Vancouver, Windsor and Winnipeg.

Plant and Main Office
SHELBY, OHIO

MANUFACTURERS OF SEAMLESS AND ELECTRIC-WELD STEEL TUBING

Welded Foundry Equipment

SHORTAGES of material during the recent war caused many manufacturers to use substitutes which frequently proved to be better and more economical than the materials used for the original product. Typical example of this is found in the experience of Holland Furnace Co., Holland, Mich., manufacturers of home heating and air conditioning systems.

By following the principles of redesign for welding as advocated by engineers of Lincoln Electric Co., Cleveland, Lemuel J. Harris, development engineer for the furnace company, reported that they were able to save a total of $1,963.20 in the construction of 48 follow boards in their foundry.

Old style unit (Fig. 3), made of wood with cast iron trunnion lugs attached by means of screws, ½-in. tri-rods, a metal parting line and maple facing, cost $47.90 each, neglecting overhead.

Influenced by the scarcity of lumber but the availability of scrap sheet iron around the plant, welded design was chosen which resulted in the fabrication of 48 steel follow boards at a cost of only $7 each—a saving per unit of $40.90 as compared with the previous design. In addition to the monetary savings, the steel units obviously last much longer in service and weigh only 72 lb as against 190 lb of wooden unit.

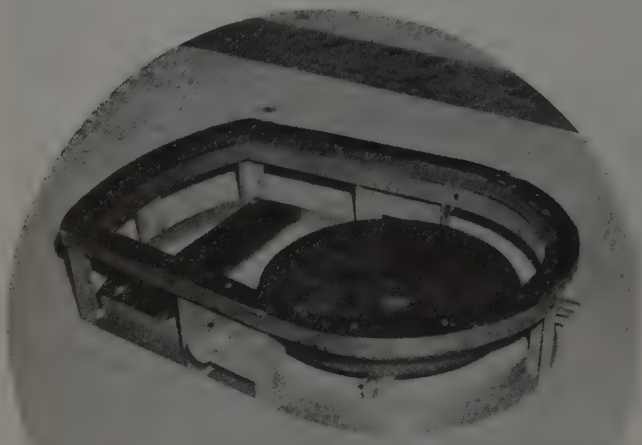
A break-down in comparative costs of the two follow board designs is given in the accompanying table.

The new, redesigned steel follow board shown in Fig. 1 consists of welded structure incorporating angle iron and steel trunnions with 14 machine bolts and nuts, simply constructed by fusing the metal parts into one integral unit at the joints.

Also, runner boxes of wood had been

COMPARATIVE COSTS OF FOLLOW BOARD DESIGNS

Wooden Construction	
Labor	$21.00
Material—Hard maple ((40 ft)	14.40
Yellow pine (80 ft)	6.80
Studs, nuts and washers—9—size ½ x 15	0.75
Lug screws—8—size ½ x 3½	0.25
Wood screws—No. 10	0.50
Cast iron for trunnions, plus molding labor	3.84
Iron—12 gauge	0.36
Total	$47.90
Arc Welded Construction	
Labor—(3 hrs)	$3.00
Material—Welding rod	0.30
Angle iron (23 ft)—$\frac{3}{16}$ x 2 x 2 in.	2.16
Black iron plate	0.45
Hard maple—(2 ft)	0.67
Machine bolts—14—$\frac{5}{16}$ x 2 in. plus nuts	0.42
Total	$7.00



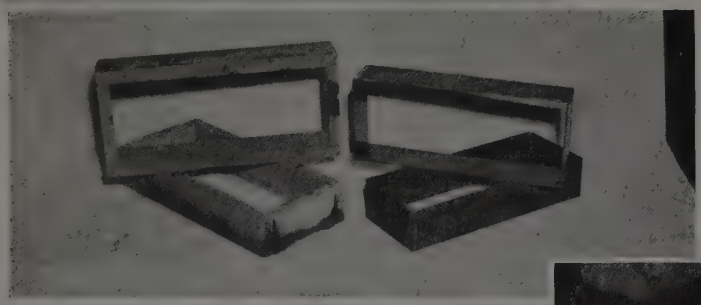
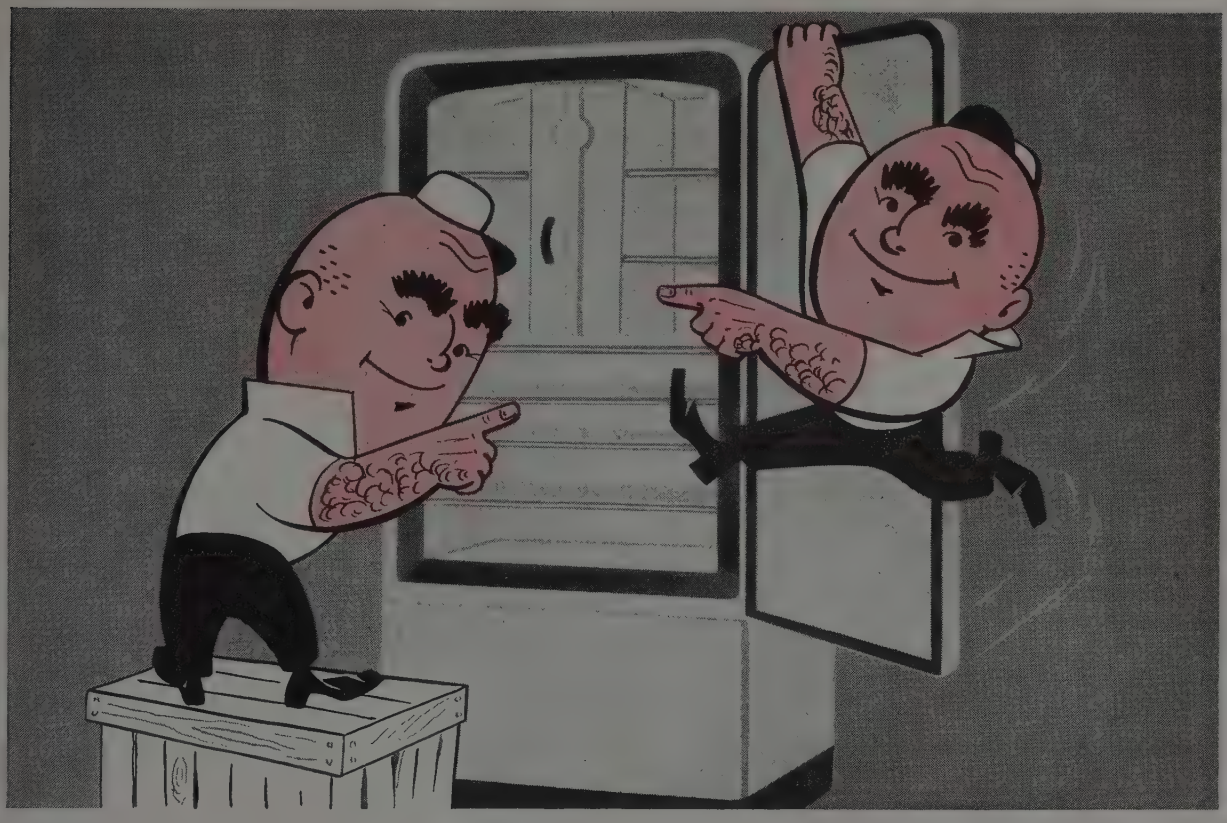


Fig. 1 (above)—Steel, all-welded follow board of more serviceable design, weighs only one-third as much as former unit

Fig. 2 (center)—Runner box, left, was replaced with improved unit of welded design, right

Fig. 3 (Right)—Former wood follow board was constructed by screwing parts together

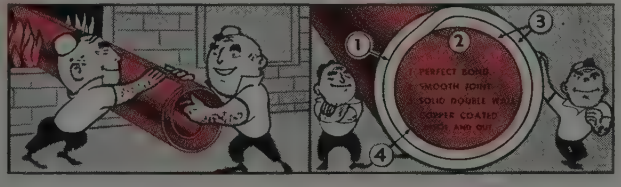


Are you a "Wet Paint Feeler?"

BUNDYWELD TUBING SUPERIORITY STEMS FROM AN EXCLUSIVE AND UNIQUE MANUFACTURING PROCESS

1 Bundyweld Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to ⅝" O.D. Special sizes cold drawn. Also in Monel, nickel and nickel alloys.

YOU'VE seen the fellow who won't believe the sign until he sees the smudge on his finger. Some manufacturers are like that. Until they see the proof, they won't believe that Bundyweld Tubing is *superior . . . different.*

That's when we send in our design engineers . . . men who can demonstrate conclusively how Bundyweld can serve you better at lower cost through these advantages:

- **great resistance to vibration fatigue**
- **high bursting point in pressure applications**
- **great strength**
- **easy fabrication**
- **low cost**

Already, hundreds of exacting demands in modern industry are met with Bundyweld—condensers and connecting lines for refrigerators, home freezers and water coolers . . . fuel, lubrication and hydraulic lines in motor vehicles . . . lubricating and hydraulic systems in machine tools . . . flash tubes, pilot tubes and supply lines in gas ranges.

How about your tubing uses? If the prospect of better service and greater economy interests you, write today. *Bundy Tubing Company, Detroit 13, Michigan.*

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES:

Pacific Metals Co., Ltd.
3100 19th St.
San Francisco 10, Calif.

Standard Tube Sales Corp.
1 Admiral Ave.
Maspeth, N.Y.C., N.Y.

Lapham-Hickey Co.
3333 W. 47th Place
Chicago 32, Illinois

Rutan & Co.
404 Architects Bldg.
Phila. 3, Pa.

Eagle Metals Co.
3628 E. Marginal Way
Seattle 4, Wash.

Alloy Metal Sales Ltd.
861 Bay St.
Toronto 5, Canada

made for years as has been the practice in most foundries. The boxes require an average of one square foot of lumber of a type which sells for $69 per thousand. The company uses nine floors of 20 boxes each or a total of 180 boxes. Average life of a wooden box is three days, which means that for this purpose a total of 360 ft. of lumber is required per week or 18,720 sq ft per year, at a cost of $1291.68.

Available in the plant is scrap sheet iron which ranges in width up to 3 in. and which has no value except as scrap. These pieces run in length from 6 to 48 in. Most runner box sizes are 16½ by 6 in., so when the shortage of lumber developed, experimental boxes were substituted of welded metal by breaking the scrap pieces at three points and welding the corners.

Inasmuch as the only cost to the company is for labor and the tack welds, nearly the entire cost of the wood boxes, $1291.68 is saved. If new stock is used to build the boxes the cost would be around $26.40 plus about $20 for welding labor, welding rod, shear and brake. A comparison of the wood and welded metal types of construction is indicated in Fig. 2.

Welded metal runner boxes can be used for an average of three years, unless runouts burn away the metal, and the savings afforded on basis of that performance would aggregate close to $3765 if scrap value of the metal is disregarded.

These are only two of the many items the company has manufactured in which arc welding has resulted in substantial savings and affected market product improvement.

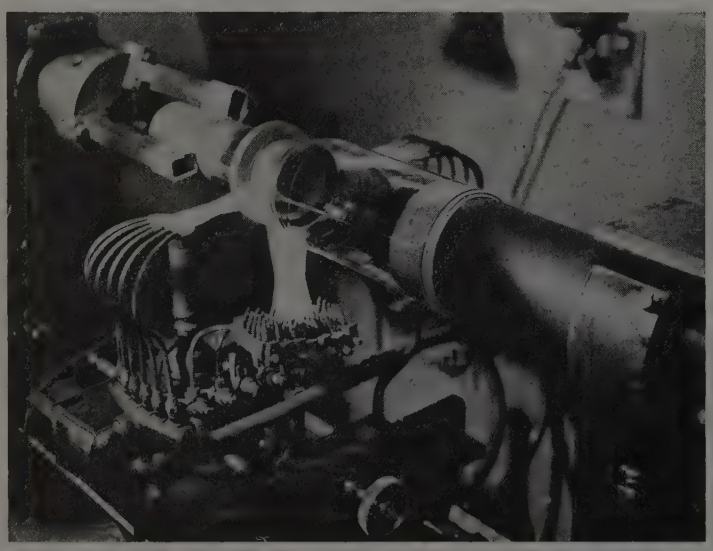
Larger Tires Increase Efficiency of Scraper

Latest construction equipment development announced by R. G. LeTourneau Inc., Peoria, Ill., is equipping its Tournapull-drawn LP Carryall scrapers with 21.00 x 24 tires. This unit formerly carried 18.00 x 24 tires because wartime conditions prevented an earlier change to the larger size tire.

While former size was considered adequate, use of larger tire increased advantages. Maximum loads can be transported with lower pressure in tires. Although the increased load capacity of tires does not affect gross load carried by the unit, it does materially affect performance in off-the-road operation. With lower tire pressure, flotation is increased and rolling resistance reduced, resulting in better and faster loading, hauling and spreading. Flotation contact area of new tire is 24 per cent greater than the old.

The change to larger tires increased scraper clearance approximately 4 in. over that obtained with smaller ones. This is advantageous in loading and spreading, for increase in rolling radius plus reduced pressure tends to buoy up the scraper. Furthermore, the equipment is able to travel in a higher gear over a wider range of adverse haul conditions, increasing its efficiency 10 to 15 per cent in many cases.

Standardization of Tournapull and scraper's tire equipment also increased tire utility considerably. Interchangeability between front and back tires now is possible—worn traction tires being exchangeable with scraper trailing tires. Also, less frequent replacement is necessary.



HOT SPOT: Great heat is required to make air-tight joint between glass and the feather-edged copper anode of this 25 kw, 4-in. transmitting tube at the Brooklyn plant of Amperex Electronic Corp. Ring attached to exterior of anode is of nickel because it will not deform to cause leaks when tube is placed in the water jacket

Calculator Assists in Computing Spindle Speeds

With three diameter scales graduated in inches, millimeters and number and letter drill size, the cutting speed calculator manufactured by Lawrence Engineering Service, Peru, Ind., is said to insure proper spindle speeds and consequently save burned and broken tools by giving the proper revolutions per minute for the job, whether it be for drilling, reaming, milling, or grinding.

Making possible instant readings without reference to tables, the calculator handles cutting speeds from 15 to 8000 ft per min, diameters from a No. 80 drill to 8 in. and spindle speeds from 7 to 100,000 rpm.

Forging Compound Reduces Stickers

Forging compound, said to minimize stickers and to eliminate build-up on dies, is the latest product of Brooks Oil Co., 315 Carson street, Pittsburgh. Compounded without use of graphite, it deposits micro-thick film on dies. Heavy flash and dense smoke are reduced to minimum.

Called Leadolene forging compound, new product is especially adapted to deep die forging, and is successful in forging railroad car wheels. Compound, reported to be pharmaceutically pure, will not poison human pulmonary system, blood stream, or digestive tract.

—o—

Fifty-four different resistor types are illustrated and described in the wall or file chart offered gratis by Shellcross Mfg. Co., Collingdale, Pa. Information on akra-ohm precision fixed wire-wound resistors covers dimensions, mounting specifications, minimum and maximum resistance values, temperature charts and temperature coefficient data.

Bunting Cast Bronze Sleeve Bearings can be supplied in a very great variety of forms—long or short—large or small—flanged or straight—grooved—drilled—milled—slotted—to your special design or to our standard dimensions. Our engineers will be glad to discuss your bearing problems with you. The Bunting Brass & Bronze Co., Toledo 9, Ohio. Branches in Principal Cities.

Bunting

BRONZE BEARINGS ☆ BUSHINGS ☆ PRECISION BRONZE BARS

3 New Annealing Furnaces

Surface Combustion, Gas-Fired Convection Heated, Roller Hearth • Right Hand Furnaces • Inside Dimension: 52 inches wide, 25 feet long, 28 inches effective door opening height • Maximum Temperature—1250 degrees • **Also with air cooling units

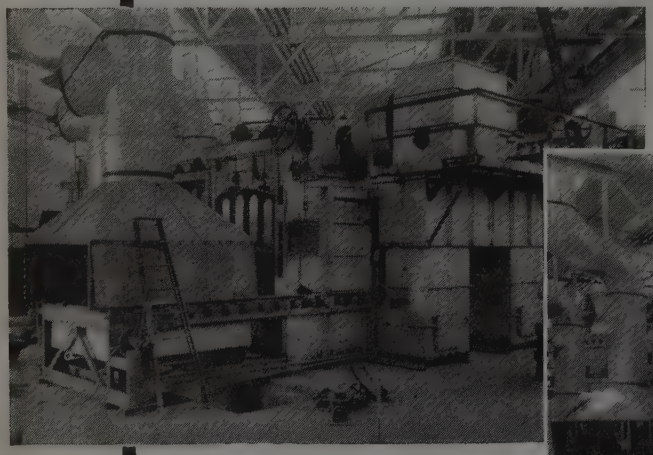
Construction:

Babcock and Wilcox firebrick • Schundler insulating block • Johns - Manville insulating cement • Trojan brick • #1 Vermiculate and various loose tile

Complete with 2 HP., 5 HP., and 30 HP. motors. Transformers, controls, etc. All motors are A.C., 3 phase, 220/440 volt, 50 cycle.

1 New Stress Relieving Furnace

Gas-Fired, Surface Combustion, Convection Heated, Roller Hearth Steel Cartridge Case. Right Hand Furnace. Inside Dimension: 49 inches wide, 25 feet long, 30 inches effective Door Opening Height • Maximum Temperature 850 degrees • Complete with 2 HP. and 10 HP. Motors, A.C., 3 phase, 220/440 volt, 50 cycle • Loading Table, Discharge Table, etc. • **Also with Air Cooling Unit



Manufactured by
Norris Stamp & Manufacturing Co.
1945

**Each of the above Furnaces complete with AIR COOLING UNIT, as follows: 7½ HP., 3 phase, 30 cycle, A.C., 220/440 Volt motor and Controls. Cooling Hood, moves 13,000 CFM at 1 inch static pressure.

DULIEN STEEL PRODUCTS, INC.

of California

11611 South Alameda • Phone Kimball 9151

Los Angeles 2, Calif.

DSP INC. ORGANIZATIONS

(*Continued from Page* 125)

Experimental Procedure: In experimental procedure for carrying out the analysis of a silver strike solution, center electrode is first made anodic to remove any silver films from either a prior run or immersion plate, following which the rheostat is set for exactly 1 amp. Next, switch No. 1 is closed (see Fig. 2), making center electrode cathodic, and plating is carried out for exactly one minute at exactly one ampere. Following this switch No. 1 is short circuited, and the rheostat set so that 0.10-amp will flow on deplating. Thus center electrode is anodic and deplating time is measured. At end of this time the deplating current in circuit suddenly drops from 0.100 amp to 0.08 amp at which point the silver will be all deplated and the anode polarization will increase rapidly.

Shown in Fig. 3 is a plot of silver cyanide content of bath vs. deplating time in minutes. Deplating time varies in direct proportion to silver cyanide content of the bath. Efficiency of silver strike solution decreases rapidly as current density is increased. This is well illustrated in graph of plating current vs. deplating time shown in Fig. 4.

Reproducibility of dip-type cells was studied by construction of three identical cells and checking each one with the same silver strike solution. Average results for a number of determinations are shown in Table I.

TABLE I

Three Cells Compared. Bath Temperature 25° C

Silver Cyanide g./L	Deplating Time Cell No. 1 min.	Cell No. 2 min.	Cell No. 3 min.
0.5	0.18	0.18	0.18
1.0	0.30	0.32	0.30
1.5	0.43	0.44	0.43

In Table II are shown the average results of plating and deplating times with varying silver cyanide concentrations in freshly prepared and filtered baths containing 40 grams per liter of sodium cyanide. As will be noted, the deplating time varies directly with silver cyanide content of bath; the greater the concentration, the longer the time.

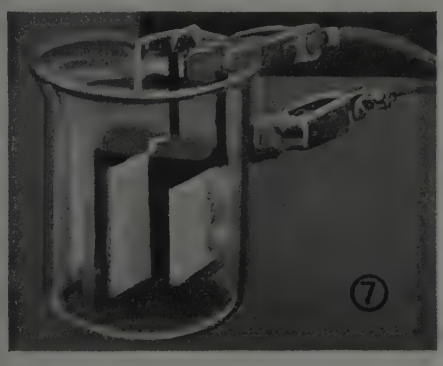


Fig. 7—Closeup of dip cell

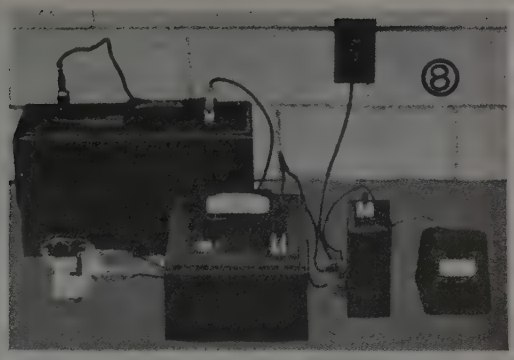


Fig. 8—Complete cell apparatus

Effect of Foreign Materials: In order to ascertain value of the method in production control of strike solutions, cell was investigated under various conditions met in commercial application of silver strikes. It was found that results were identical whether distilled water or tap water was used, provided silver strike solution was filtered clear. Boiling silver strike solution did not change the plating rate. Colloids present in bath were found to change the electrometric end point and should be avoided. This is shown by the results given in Table III, which represents experiments in which colloids were added to the bath and the deplating time measured with the results mentioned above.

TABLE II

Effect of Varying the Silver Cyanide Concentration. Bath Temperature 27° C

Silver Cyanide Conc'n. g./L	Plating Time min.	Deplating Time min.
0.5	1.00	0.18
1.0	1.00	0.30
2.0	1.00	0.59
2.0	0.50	0.33
2.0	0.25	0.18
4.0	1.00	1.10
4.0	0.50	0.59
4.0	0.25	0.34

None of the following chemicals present in substantial amounts affected either plating or deplating rate: (a) sodium carbonate; (b) excess sodium cyanide; (c) sodium ferrocyanide; (d) sodium hydroxide; (e) activated charcoal; (f) potassium salts in place of sodium salts; (g) ammonium hydroxide; (h) various bath impurities which accumulate in commercial plating. In addition, solutions one month old plated at same rate as a fresh solution.

Also of interest is the fact that data for silver strike bath have been found to check the equation of Fink and Lester[3] for the quantitative evaluation of relationship between metal deposited and amount of hydrogen deposited. Within limits of experimental error, temperature and composition of plating bath being constant, data for silver strike will follow the general equation:

$$\log (1-e)\, I - m \log eI = b$$

where: m and b are constants
e is current efficiency
and: I is current density

Thus the electrolytic cell method is applicable and successful for rapid check and routine control of silver strike solutions used in production plating. Also it is of interest to note that the general method can be applied to more concentrated silver cyanide baths by dilution of test sample with sodium or potassium cyanide.

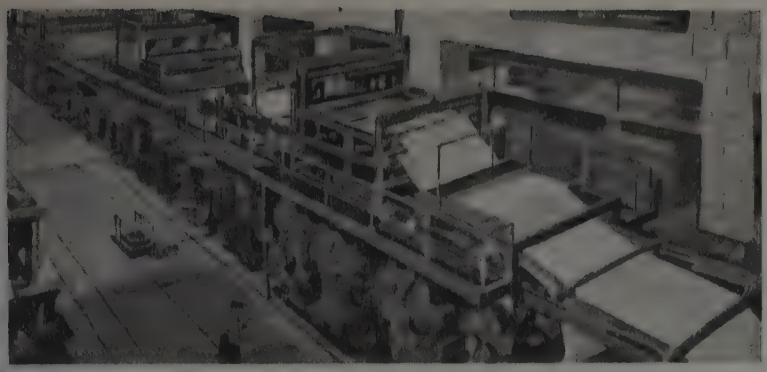
Copper Cyanide Strike Solutions: Copper is deposited on steel products from cyanide baths for a number of important applications. Deposition from low concentration striking baths is employed as a cleaning step, giving a thin film of copper which improves adhesion and protective value of subsequent electrodeposits.

TABLE III

Bath: Sodium Cyanide, 40 g./L; Silver Cyanide, 1 g. L; Temperature, 23° C

Addition Agents	Deplating Time min.
None added	0.28
Starch 1 g./L	0.36
Tergitol 4 drops/L	0.36
Gelatin 1 g./L	0.42
Soap 1 g./L	0.42

PAINTED FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MACPHERSON



YOU WOULD HAVE LITTLE NEWS, LONG DELAYED —WITHOUT STEEL

Without steel, you would get news by sailing packets, stage coaches and steam cars. It would be days, even weeks, old. You would read it in small newspapers printed crudely on slow little presses.

Today, with the assistance of a great variety of steel products, news and pictures are brought to you from all over the world in minutes—like magic. Steel wire enables them to be transmitted almost instantly by telegraph and telephone. Steel goes into equipment that brings them to you by radio, television and motion pictures. Fast rotary steel presses produce them in newspapers and magazines.

The swift collection and distribution of news and pictures would be impossible without steel—the universal metal of great strength and endurance, high resistance to wear and weather. For the high-speed work it must do, the communications industry requires steel products of the highest character, such as are produced under rigid quality control by Jones & Laughlin Steel Corporation. These include J&L steel wire, hot and cold rolled sheets and strip, cold finished bars and special shapes, seamless and Electricweld steel pipe, tin mill products and such special J&L products as Jalcase, a forging steel, Otiscoloy, a high tensile steel, and Jalloy, a tough, hard, strong steel for dynamic jobs.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

J&L STEEL

LIGHTER, STRONGER, CONTROLLED QUALITY STEELS

NEWS & PIX

One million daily circulation for a newspaper is easily served by the modern, high-speed, steel-constructed rotary presses that cost as much as a million dollars (see small sketch). They pour out streams of copies of your favorite paper containing news and pictures received by wire and radio up to the last minute before edition time. Presses are made up in units that weigh 8 to 10 tons each and print from stereotyped plates. Make-over for late editions can be done in a few minutes.

First American newspaper, printed on a sheet 7½ x 11 inches, appeared April 24, 1704, was called The Boston News Letter. Three copies have been preserved.

News pictures come half around the world in minutes (sent and received by radio and wirephoto equipment) to illustrate next edition of your newspaper.

Typesetting by machinery in newspaper and publishing plants has been substituted for the slow, laborious practice of setting type by hand. The workability and durability of steel made possible the perfection of time-saving machines that not only set type, but also cast it brand new each time.

More color in daily papers for pictures and ads that will put week-day issues on a color parity with Sunday supplements and magazines, is being provided by improved, high-speed steel presses.

Venetians (1536) paid 1 gazetta to read manuscript paper circulated monthly reporting progress of a war, and eventually gave name of coin to newspaper itself.

Around the world every 7 days with passengers, pictures, mail, express is the regular schedule now operated by Air Transport Command, a forerunner of what civilian airlines will soon be doing. Nine-hour hops between East and West Coast are regular schedule with several airlines.

Armor for ocean cables consists of heavy, galvanized steel wire wound helically around the copper cable to protect it from deep sea or inshore damage.

"A new cable—called coaxial," states a newspaper advertisement of the Bell Telephone Company of Pa., "already shoulders an unheard of number of conversations simultaneously, and will play a stellar role in bringing television into your home."

Typewriter replaced pencil in editorial rooms, increased speed and accuracy in turning out "copy." But for steel, and especially the precision of parts possible with cold finished steels, there would have been no "writing machine."

Free reproduction in full color of Orison MacPherson's painting at left is available. Designed especially for framing, the painting is lithographed on fine, heavy paper, 14 x 17 inches. Write Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh 30, Pa.

COPYRIGHT 1946, JONES & LAUGHLIN STEEL CORPORATION

Heavier cyanide copper deposits are used extensively to prevent case-hardening of specified areas of ferrous metal surfaces. Cyanide copper deposits when used on steel as an undercoat for nickel and chromium, represent a substantial part of total thickness of coating specified. Often copper deposits are used on steel as an undercoat to effect savings in polishing and buffing costs, and as a means of improving metal distribution over irregularly shaped articles by virtue of its superior throwing power.

Experimental Procedure: Experimental procedure used to determine operating conditions for copper cyanide solutions is similar to that for corresponding silver solutions except that a plating time of ½-min and a plating rate of ½-amp are used. Deplating rate used is 0.20-amp, with 0.18-amp used to denote end-point. However, testing of copper cyanide solutions is somewhat more complex than testing of corresponding silver solutions because rate of copper deposition varies with the free cyanide[4]. Therefore, it is necessary to determine free cyanide by standard analytical procedure before copper concentration can be taken from plating and deplating graphs. Fig. 5 shows variation of deplating time with various concentrations of free cyanide and of copper cyanide. Deplating time and corresponding cathode efficiency are greatly influenced by the free cyanide, in fact, considerably more influenced than by variation of metal content when keeping free cyanide constant. Furthermore, these curves illustrate that well known fact that if free cyanide is increased sufficiently, copper will not deposit under normal plating conditions. Cathode efficiency decreases as current density is increased, with metal deposit approaching a constant with increased current density.

Plating rate of the copper cyanide strike solution also varies with operating temperature of the bath. Effect of this variable is given in Fig. 6.

In general, copper cyanide strike solutions are similar in their behavior to the corresponding silver baths as far as impurities are concerned. Copper baths must likewise be free of colloids. Plating rate of copper bath is greatly influenced by cyanide content of bath, whereas plating rate of silver in cyanide bath appears to follow diffusion theory of Dole[5]. This improved method of control should prove useful in many plants utilizing electrodeposits of copper on steel in any of the various useful applications of the process.

REFERENCES

[3] Prominsl & Wood, Modern Electroplating, p. 296, Electrochemical Society (1942).
[4] Wood, Modern Electroplating, 8, 311, Electrochemical Society (1942).
[5] Fink and Lester, Trans., Electrochemical Society, 78, 349 (1940).
[6] Thompson, Trans., Electrochemical Society, 79, 417 (1941).
[7] Dole, Trans., Electrochemical Society 82, 241 (1942).

Internal Pressure Chart

DIAGRAM on opposite page gives safe working hydraulic pressures for round steel tubes, having outside diameter up to 10 in., wall thickness from 0.035 to 1 in., ultimate tensile strength of steel from 40,000 to 100,000 psi., and safety factors from 2 to 6.

To plot wall thickness curves on chart, values of P or ultimate pressure were calculated for each thickness and outside diameter by each of the six most frequently used formulas: the Common, Barlow, Boardman, Mean Radius, Lame, and Clavarino. The average result of the first two named (or "thin tube" formulas) was compared to average result of the last four (or "thick tube" formulas). In each case, whichever was the lower was used in plotting curves. It may be of interest to know that for all values of P equal to or less than one-sixth of ultimate tensile stress, the average of the thin tube formulas was the lower, while for all greater values of P the average of the thick tube formulas was the more conservative. Dividing line is marked as A-A.

Calculations were based on cold drawn, average wall steel tubing, and values of ultimate tensile strength were reduced by 10 per cent to compensate for a possible variation in wall thickness.

Diagram was primarily designed for low carbon, soft annealed steel having ultimate tensile strength of 48,000 psi. For this reason it permits a direct reading on the lower scale of ultimate pressure for any tube size of this steel by going from the outside diameter scale horizontally to the wall thickness curve, thence vertically down to the ultimate pressure scale. By stopping at desired safety factor line (one of the radial straight lines) and returning to left vertical scale, safe allowable pressure may be read on this scale for steel of 48,000 psi.

In order to make the chart usuable for steels having other strength characteristics, another set of radiating straight lines was introduced. These read from 40,000 to 100,000 psi ultimate tensile strength. By returning horizontally to the proper steel line, thence vertically to the scale allowable pressure may be read for steel and tube in question.

An example is worked out on the chart, arrows indicating the procedure to follow. Intermediate values may be interpolated between lines or curves, but on horizontal or vertical distances only. Data on chart were developed by Benjamin Ostlind, engineering department, Baker Steel & Tube Co., Los Angeles.

New Cutting Oil Bases Developed for Metals

An extreme pressure cutting oil base in which sulphur and chlorine are combined in non-corrosive form is one of three new cutting oil bases developed by National Oil Products Co., Harrison, N. J. Known as Nopco 1000-C, the product is recommended for steel, brass and copper cutting operations in which frictional loads are extremely high. Made with a fatty oil base, it is said to be odorless and free from tarry matter and blends with any diluent petroleum oil.

The second development, a new sulphurized cutting oil base, Nopco 1000-A, containing 15 per cent sulphur is being offered for straight cutting operations on ferrous metal. Company states it is best used commercially by dilution of blending with low viscosity mineral oil in which base is soluble. Finished parts are said to show a greater amount of clear smooth finish and nonrusting surface because of specific fatty oil used in base.

The third development is a soluble cutting oil base, Nopco 2009-A, for operations which require rapid removal of frictional heat that develops under high loads and is claimed to be satisfactory for grinding, broaching, polishing and similar metal working operations where detergent properties are required to remove metallic dust. Twenty parts of this base will emulsify 80 parts of mineral oil, it is said.

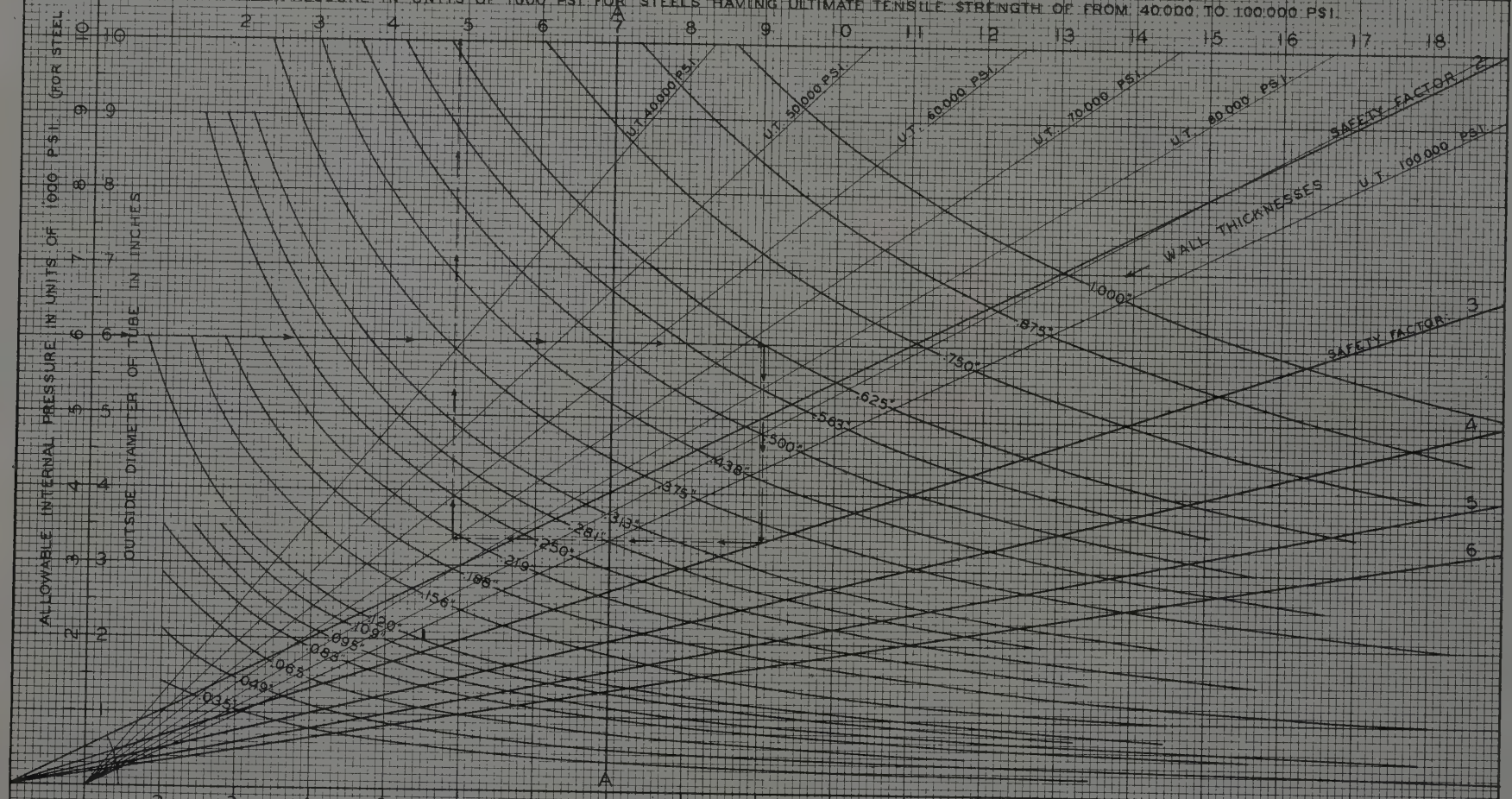
INTERNAL PRESSURE CHART

FOR COLD DRAWN—AVERAGE WALL—STEEL TUBES—MILD CARBON STEEL—ANNEALED—ULT. TENS.: 48000 PSI

N.B.: ALL VALUES REDUCED 10% TO ALLOW FOR VARIATIONS IN WALL THICKNESS.

DIRECTIONS: TO FIND ALLOWABLE PRESSURE FOR A TUBE 6" O.D. X .625" WALL OF 70000 PSI (U.T.) STEEL FOLLOW THE ARROWS ON DOTTED LINES FROM 6" O.D. TO WALL THICKNESS CURVE: .625"—THENCE TO DESIRED SAFETY FACTOR LINE 3—THENCE TO 70000 PSI STEEL LINE—THENCE TO UPPER SCALE AND READ ALLOWABLE PRESSURE: 4880 PSI.

ALLOWABLE PRESSURE IN UNITS OF 1000 PSI FOR STEELS HAVING ULTIMATE TENSILE STRENGTH OF FROM 40,000 TO 100,000 PSI



NOTE: VALUES TO THE LEFT OF LINE A–A REPRESENT AVERAGES OF THE FOLLOWING TWO "THIN" TUBE FORMULAS:

"COMMON": $P=\frac{2S\times T}{ID-1}$; "BARLOW": $P=\frac{2S\times T}{OD}$;

NOTE: VALUES TO THE RIGHT OF THE LINE A–A REPRESENT AVERAGES OF THE FOLLOWING FOUR "THICK" TUBE FORMULAS:

"BOARDMAN": $P=\frac{S\times T}{IR+0.6T}$; "MEAN RADIUS": $P=\frac{2S\times T}{OR+IR}$; "LAME": $P=\frac{S(OR^2-IR^2)}{OR^2+IR^2}$; "CLAVARINO": $ID=OD\sqrt{\frac{10S-3P}{10S+4P}}$;

Brazilian Steel Plant

Increases Capacity

ELEVEN years ago at Monlevade in the mining state of Minas Geraes, Brazil, the site of one of the largest steel mills in South America was a jungle wilderness inhabited by a few people and almost inaccessible. Today it is a thriving community with rows of attractive concrete bungalow-style cottages where the occupants enjoy free use of water and electricity. In the center of this little city is the plant of the Companie Siderugical Belgo-Mineira.

The company is capitalized at 150,000 Contos (about $7,500,000) and is controlled by Brazilian, Belgian and Luxemburgian capitalists. They own and operate two steel plants: the Usina Siderurgica plant, near the city of Sabara, where the administration offices are located; and the Usina Barbanson (generally called Monlevade) near the city of Villa Piracicaba.

The Usina Siderurgica works includes two blast furnaces, three open hearths and a merchant mill. The annual capacity of this mill is 40,000 tons of finished products.

The Usina Barbanson (Monlevade)

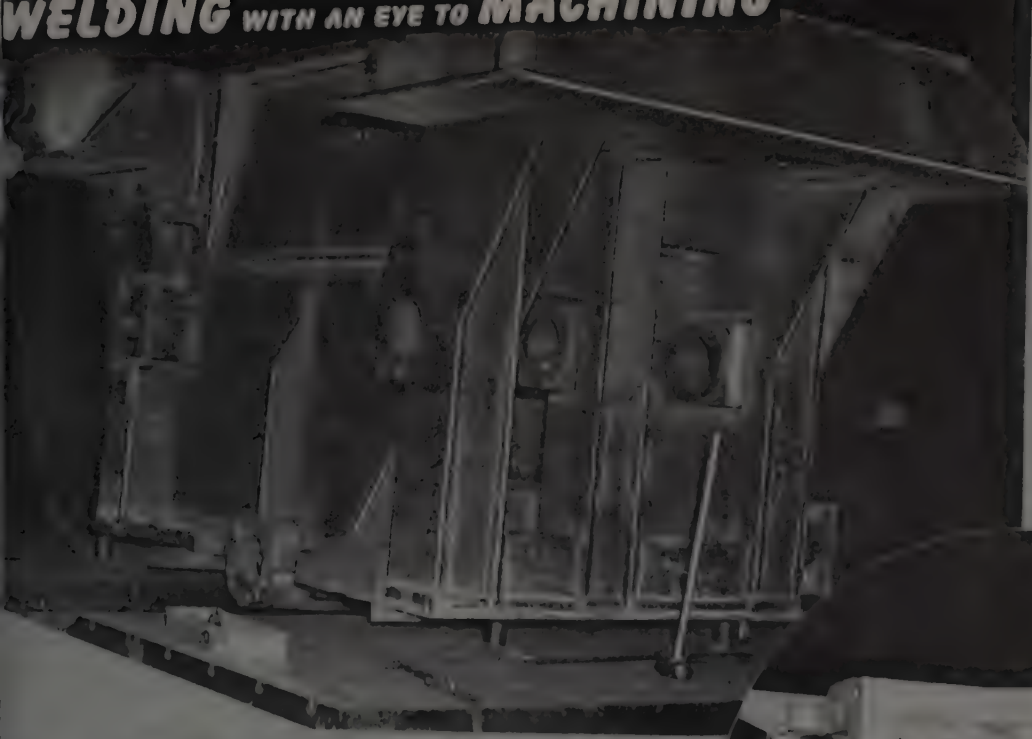
Fig. 1—View of the Usina Barbanson plant, Monlevade, Brazil, and concrete housing projects for the workers

Fig. 2—Iron ore from this mine is smelted in blast furnaces at the Monlevade plant in the state of Minas Geraes, Brazil

Fig. 3—One of the 85-ton blast furnaces located at the Usina Barbans

Fig. 4—One end of the soaking pit building. Ingot buggies carry two molds

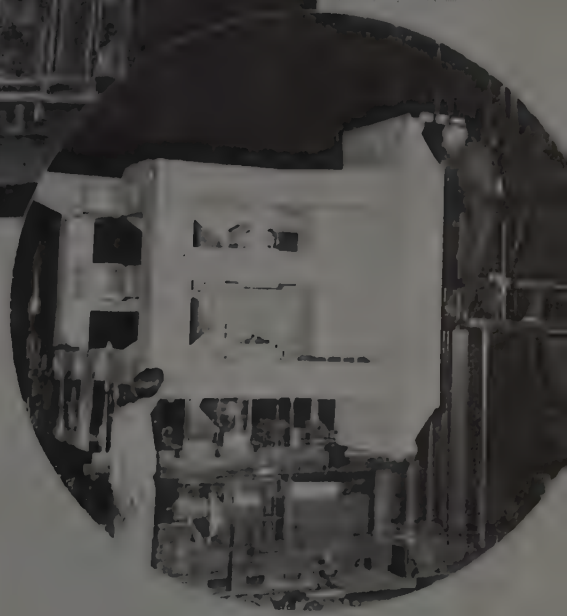
WELDING WITH AN EYE TO MACHINING



***Rigid weight and tolera control*—torch cut bea holes and knockouts n mize stock to be remove saves costly machin time in this 13 ton mech cal press bed.**

Milling an interna surface *(below)*

Multi-surface milling facing is possible with machine without any m change of setup. The ind ing table permits swing the part through 360 grees of arc, with but a f minutes time lost.



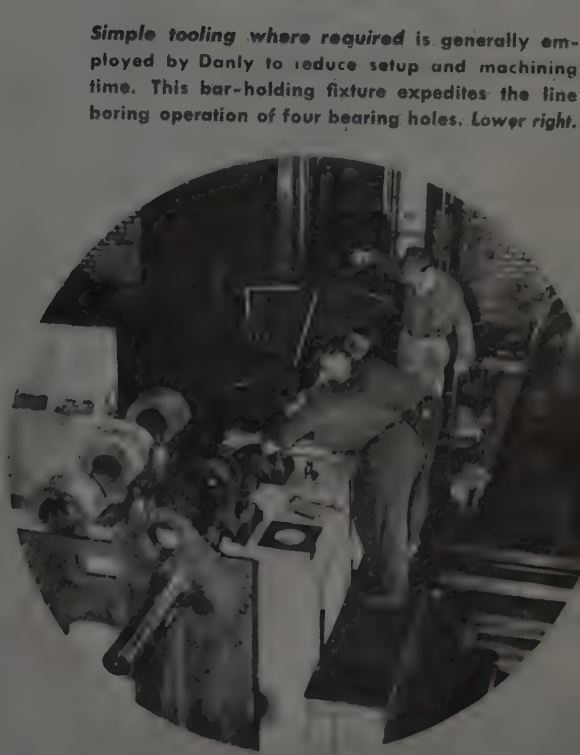
DANLY FABRICATES HEAVY *PRESS BEDS*

Completely equipped welding and machining divisions make Danly a natural for the production of heavy press fabrications and other large machinery parts. Welding facilities include positioners, layout and setup tables, machine torch cutters, handling and normalizing equipment.

Accurate detailing and sub-assembly breakdown minimizes tolerance accumulation—lessens distortion—speeds the job to the machining stage.

Ideal for machining large structures, the floor type boring mills *right* combine precision with great versatility. Equipped with indexing tables for fast setup and multi-surface machining, these boring mills are examples of the type of equipment Danly offers for faster, better production of press components.

Simple tooling where required* is generally employed by Danly to reduce setup and machining time. This bar-holding fixture expedites the line boring operation of four bearing holes. *Lower right.



DANLYWELD

Welded and Machined at Lower Final Cost

DANLY MACHINE SPECIALTIES, INC.
1100 SO. 52nd AVE., CHICAGO 50, ILL.

Build with Wolff Steel Service

BENJAMIN WOLFF & COMPANY
PRIME STEEL SERVICE
CHICAGO

A new, greatly expanded warehouse is under construction at Benjamin Wolff and Company . . . planned for the active future that you, too, are looking toward. Certainly, these days of frustration in steel are limited, while unlimited are the opportunities that lie ahead. When this time comes, Wolff Steel Service will be ready to back-stop your requirements with alert, enlarged and positive action to bring you the right steel, in the right place, at the right time.

BENJAMIN WOLFF AND COMPANY

General Office and Warehouse — 58th St. at Seeley Ave., Chicago 36, Ill.

Wisconsin Office — 176 W. Wisconsin Ave., Milwaukee 3, Wis.

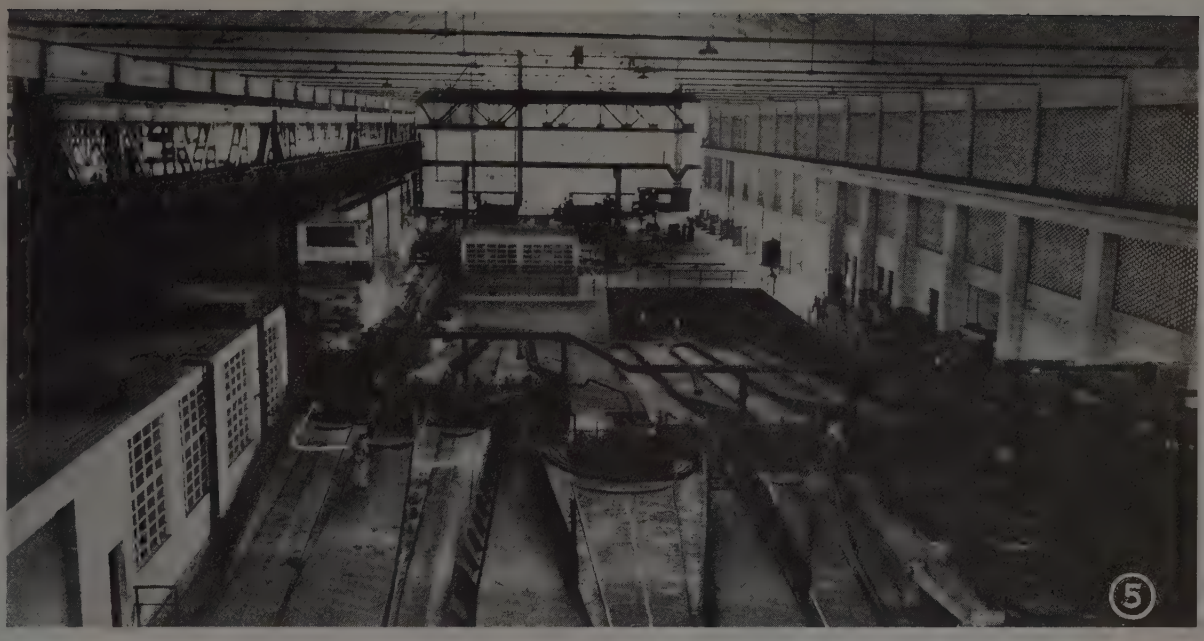


Fig. 5—View of cross country rod mill at Barbanson, Brazil, works is built with sloping runouts

works has two blast furnaces and two 85-ton stacks under construction, two 35-ton open hearths and two under construction, 38-in. blooming mill and a rod and wire mill including two continuous wire drawing machines and a galvanizing and barbed wire department. At present the annual steel output is 60,000 tons which will be increased to 120,000 upon completion of the two new 35-ton open hearths. A structural mill for rolling 40 to 100-lb. rails and 3 to 15-in. sections now nearing completion, will have an output of 40,000 tons of rails and sections.

Aluminum Roofing

(*Concluded from Page* 132)

length. In order to handle the problem of roof expanson and contraction which is said to be considerable in a roof of this type, it was necessary to stagger all of the joints to prevent leakage.

Before the new roof could be installed, the old roof had to be removed and the underlying structure prepared for the new surface. Concrete forming the base for the old roofing was left in place as was the 30 lb layer of felt. Over this a 1 in. layer of Armstrong cork was mopped on, followed by another layer of 30 lb felt; last of all, a 15 lb asbestos felt was placed with outer surface dry.

In order to anchor the aluminum sections securely in place, holes were drilled through the felt and cork, and approximately 1½-in. or more into the concrete for receiving expansion shields. Each shield consisted of a zinc die casting known as a Cinch anchor.

After holes were drilled and expansion shields placed, they were filled with an Alumlastic caulking compound prior to placing anchor bolts. Roof plug anchor bolts were spaced at intervals of 22 in. as were the cap bolts. Slots were cut in the battens to permit sliding during expansion and contraction.

For ease of construction it was necessary to build the sections of scaffold shelving sufficiently wide to allow a workman to reach the bolt areas easily and to handle sections of sheet, bar and battens with minimum effort. System of scaffolding illustrated in Fig. 2 was designed so that it could be shifted both laterally and vertically.

Aluminum sheets were placed in interlocking vertical sections with the upper sheets progressively overlapping the ones below. Top sheet at upper end of battens and caps adjoined top section and was fabricated with a covering cap at its lower end to avoid leakage at that point. End cap was designed to form a sleeve over the cap and batten and was welded to the base sheet.

All bolts and washers were made of aluminum, utilizing in each case the alloy best suited to meet the requirements of the job at hand.

Insulating Process

(*Concluded from page* 134)

pieces travel continuously through an oven. Refinements in the application of heat include an insulated oven, which holds heat and transfers it by radiation and convection to the products passing through.

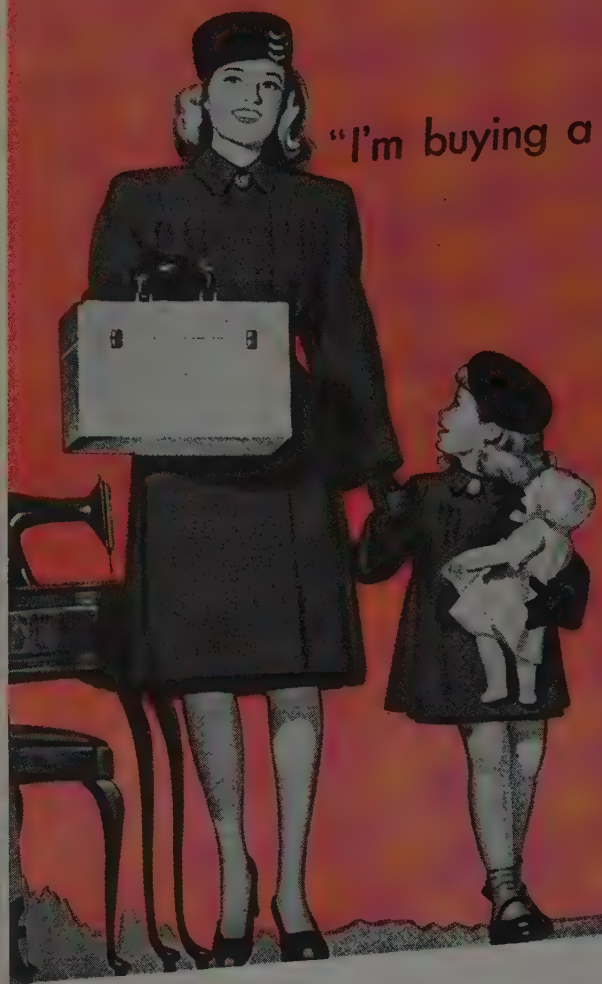
The process starts at the press of a button without preheating the oven. Direct, immediate temperature readings may be taken anywhere at any time during the operation. Fig. 3 shows the overall view of the equipment. Stators and armatures are visible during the dipping operations through glass doors, Fig. 2. Varnish distribution is exact and even, so the balance of the treated pieces is not upset, and balancing can be done before treating.

Because of the dip method employed in the process, varnish tanks are smaller and the varnish is used up in a short time. Thinning and other measures required to maintain viscosity and freedom from contamination are reduced to a minimum. Also the small volume of varnish in the system greatly reduces fire hazards.

Both small and large pieces may be treated, as well as special and non-uniform sizes, such as rotors weighing in excess of 2000 lb. Non-conveyor adaptations can be designed to treat such pieces.

Any means of heating and any type of insulating varnish can be used with the process. Infra-red lends itself particularly well to this process because of its economy and ease of control it is said.

All varnish applied in the windings is retained, and there is no drainage from the dipped piece, either as it leaves the varnish bath or as it travels through the baking oven. Varnish is applied only to the parts requiring insulation. Fig. 1 shows the exit side of the oven. Here armatures have been heated, dipped, baked and dried and are emerging from the equipment.



"I'm buying a really portable sewing machine!"

Lightness! It's the new buy-word for smart shoppers. It's one thing you'll insist on when you buy your new portable sewing machine. In a machine like that, as in many fine products . . . when you lift magnesium . . . you'll know you've found lightness!

There's an easy, carefree feeling to this metal and the modern things made from it. And you'll find magnesium, for all its lightness, a strong and durable metal—a bargain, even if the price should be a little higher.

Dow sells no sewing machines. But Dow magnesium and Dow engineering skill are being used by leading manufacturers to produce many fine, new, lightweight products. You'll be seeing them!

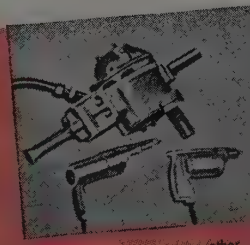
Ready... to make products move!

MAGNESIUM

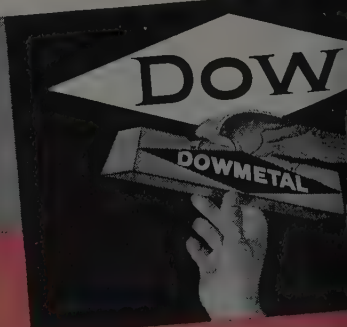
LIGHTEST OF ALL STRUCTURAL ME

Through a unique process, Dow produces magnesium metal from sea water in quantities ample for widespread use in many industries.

Working closely with many independent fabricators, Dow's magnesium plants supply manufacturers with the metal in all common forms.



Portable tools—and many other industrial and consumer items—are included in the growing list of fine lightweight magnesium products.



MAGNESIUM DIVISION • THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN • New York, Boston, Philadelphia, Washington, Cleveland, Detroit, Chicago, St. Louis, Houston, San Francisco, Los Angele

This is a reprint of a Dow magnesium advertisement which appears in full c in national magazines reaching millions of readers in all parts of the cou

MAGNESIUM

appeals to the public . . .

You don't have to be a technical man to appreciate the advantages of magnesium. Plain folks can sense the significance of *lightness* the instant they pick up a modern product made of this fine weight-cutting metal. It's a feature that makes for consumer sales—despite a possible slight price premium. For technical men, manufacturers, and production men, on the other hand, magnesium has industrial advantages of equal importance. They profit by advantages like speedy machining, easy handling, ready adaptability to many production methods. In many a modern plant they're adding up all these advantages to increased profits, lower costs.

MAGNESIUM

. . . appeals to industry

FORGING magnesium produces lightweight parts with good strength, capable of withstanding repeated stresses. Their exceptional soundness also recommends them for applications requiring pressure tightness. Typical applications include many such parts as aircraft engine bearing caps, bearing housings, hinges, engine mountings, valve and pump bodies, control levers, brackets, and fittings.

ING is a speedy and efficient method of ng magnesium. Speeds up to 15,000 feet minute can be attained with band saws, and nesium can also be readily cut with circular s and hand or power hack saws. Low cutting sures permit larger cuts per tooth than are ible with other structural metals.

DIE CASTING is widely used to turn out magnesium castings with good surfaces and close dimensional tolerances, requiring a minimum of machining. These sound, strong, lightweight parts are low in cost wherever production quantities are sufficient. Applications include engine parts, housings, boxes, covers, instrument parts, and many others.

MACHINING takes minimum time and po with magnesium. Magnesium is a free mac ing metal in all forms. The life of cutting t used for magnesium work is exception good, especially if they are carbide tipped. surface finish is readily obtained.

MAGNESIUM DIVISION • THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis • Houston • San Francisco • Los Angeles • Se

Industrial Equipment

Carbide-Tipped Cutter

Super Tool Co., Detroit, is announcing a face milling cutter using solid Carboloy blades. Only one type of body is required for machining any and all materials, the only variation being in the angles ground on the solid carbide blades, which can be altered to suit any specified material.

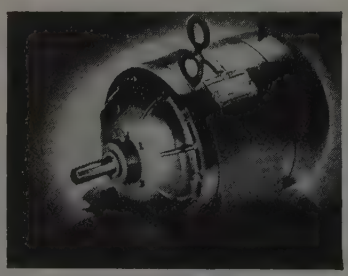
Solid unbrazed carbide blade is held in head or holder by a sturdy wedging

device. This permits the carbide blade to be adjusted for wear and to insure profitable use of maximum possible portion of blade. Cutters are offered in 6, 8, and 10 in. diameters, in both right-hand and left-hand, as standard tools.

Steel 8/5/46; *Item No.* 9396

Fan-Cooled Motor

A new totally enclosed fan-cooled motor designed for use in dusty, and corrosive atmospheres has been added to line of Tri-Clad induction motors, products of General Electric Co., Schenectady, N. Y. Motor is offered in standard, explosion-proof, and dust-explosion-proof types from 1 to 1000 hp. Short in length



and compact in construction, the motor can be installed in a small space, making it suitable for machine tool applications where motor must be part of driven machine.

Punchings and windings within inner shell of motor are cooled by a non-sparking external fan.

Bearing housings are cast integral with end shields as a barrier to entrance of foreign materials. Pressure-relief greasing is accomplished without disassembling or stopping motor.

Steel 8/5/46; *Item No.* 9466

230-Volt Welder

A welder incorporating multi-range dual welding control has been developed by Hobart Bros. Co., Troy, O., for operation on 230-v. single phase power lines with a maximum input of 35 amp. It can be used with a standard 3 kva transformer.

Welder has a range of 20 to 180 amp. Multi-range dual control eliminates use of plugs and jacks, and no live connections are exposed. Current adjustment is accomplished in 30 evenly spaced steps by use of large convenient hand wheel on front of cabinet. Smaller adjustments can be obtained with switch in center of this

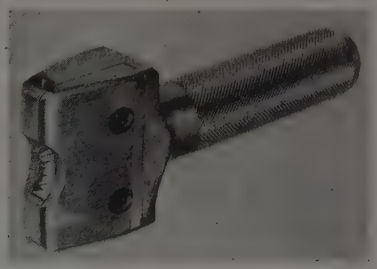
hand wheel, which also functions to disconect welder from power line. Efficiency of welder at maximum load approaches 86 per cent.

Steel 8/5/46; *Item No.* 9402

Marking Device

A line of convex marking devices for stamping part numbers, serial numbers, dates, etc., on the periphery of cylindrically shaped parts, is being introduced by New Method Steel Stamps Inc., 147 Jos. Campau, Detroit 7. Interchangeable steel type characters are held in place by a steel plate attached to body of holder with two set screws.

Each marker is of semi-standard design, since parts to be marked having



different radii require different holders and type. Type capacity can be readily varied to meet requirements by using spacers.

Steel 8/5/46; *Item No.* 9474

Grinding Fixture

George Scherr Co., 200 Lafayette street, New York 12, announces development of an all-purpose tool fixture for grinding of lathe tools, screw machine form tools, shaper, planer, milling machine or angle cutting tools.

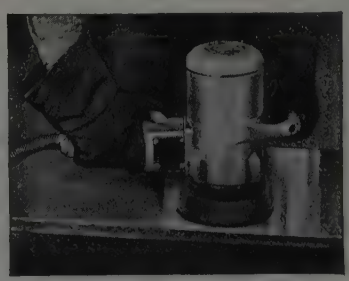
Tool is placed on magnetic chuck of a surface grinder and is firmly held in place by magnetic power, eliminating uncertainties of hand grinding. Graduated by degrees up to 90, angles both left and right may be obtained. At the same time, rake angle is ground on tool by means of a tipping block, which gives 3, 5, 7 and 10 deg clearance.

It may be used to grind tools from ⅛ to 1¼-in.—also for grinding carbon, alloy and tungsten carbide tool bits.

Steel 8/5/46; *Item No.* 9442

Portable Grinder

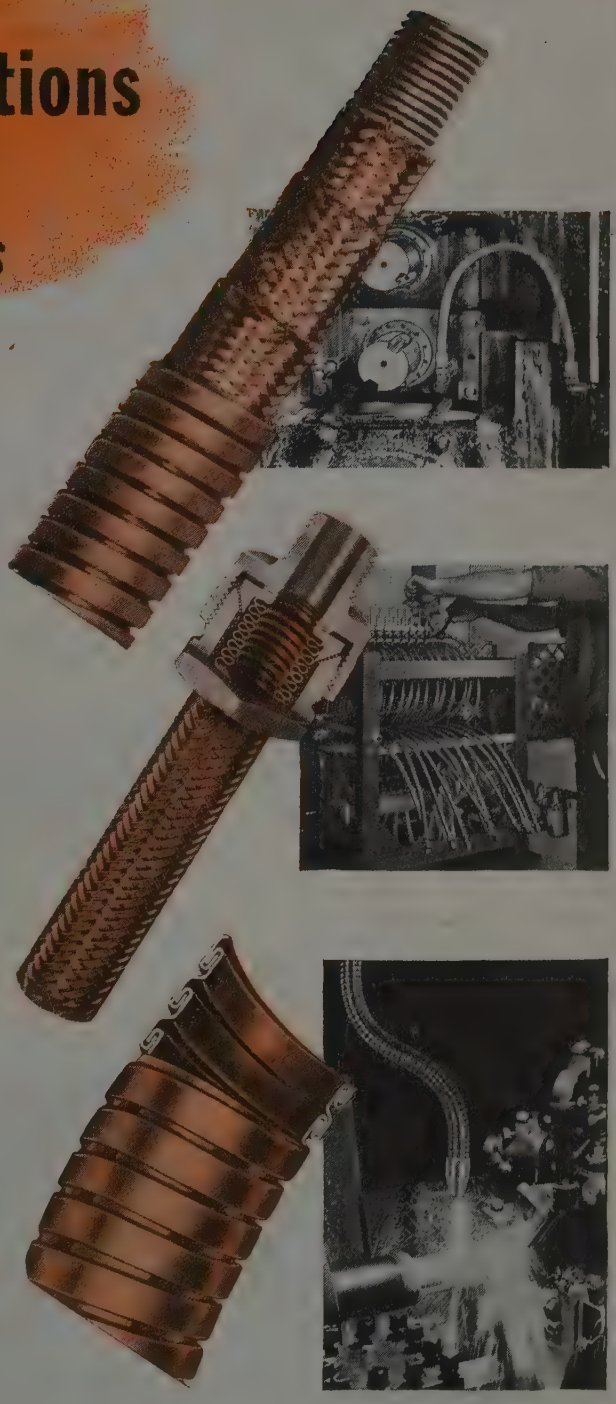
William H. Howland, 2533 East 73rd street, Chicago 49, announces a new Gaston grinder, a portable instrument for



grinding and sanding operations on all gages of steel and other metals, and for

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 160.)

3 TYPES OF *Flexible* Connections ...each offers distinct advantages



1

Withstands Frequent Flexing

"American" *Helical* Seamless Flexible Tubing. Particularly well adapted to services involving frequent or constant flexing. Available unbraided or with single, double or triple "basket weave" wire braid, with or without reinforcing armor, and with or without fittings attached.

2

Aids Maintenance Men

"American" *Annular* Seamless Flexible Tubing. Each convolution is a complete and separate circle or ring in itself. Heat proof Reattachable Couplings (illustrated) can be readily attached and detached with standard shop tools. Ideal where assemblies must be made up "on the job."

3

For Moderate Pressures

"American" Strip-Wound Metal Hose is available in four popular types, some without packing, others packed with asbestos, cord, rubber or wire. Made in brass, bronze, galvanized or stainless steel and other workable metals. Used for carrying steam, water, oil, hot air, grinder dust, chips or light, dry material.

ANACONDA
from mine to consumer

American
METAL HOSE

THE AMERICAN BRASS COMPANY

American Metal Hose Branch

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

IN THOUSANDS of plants throughout the country, flexible connections of the types shown are safely and economically conveying oil, water, steam, gases and semi-solids. Engineered to absorb vibration, compensate for misalignment, or allow for movement of parts, such connections withstand heat, pressure, abrasion and corrosion. Detailed information? Write for Bulletin SS-50.

46330

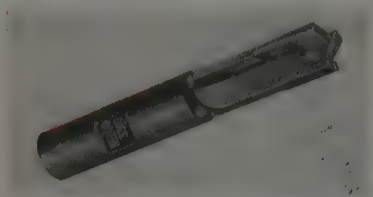
use with wire brushes for removing paint, rust, etc. It is powered by a 3-phase motor which is without brushes, commutators or gears.

Grinder starts at its full speed which remains constant under heavy load to eliminate glazing of grinding wheel. Of dust-tight construction, it is manufactured in three sizes, 1, 1½ and 2 hp.

Steel 8/5/46: *Item No.* 9525

Carboloy-Tipped End Mill

Three-flute carboloy-tipped end mill shown here was designed by Nelco Tool Co. Inc., Brooklyn, N. Y., for use on all types of alloy steel, cast iron, brass, bronze and plastic material. Constructed to eliminate chatter, tool ranging in size



from ⅜ to 2 in. in diameter is said to mill so smoothly that a finished cut is sometimes not required at all. According to the manufacturer, 3-flute design provides adequate chip room for cool and free milling.

Steel 8/5/46; *Item No.* 9633

Plastics Injection Press

Power-operated plastics injection press of 1 oz capacity developed by Van Dorn Iron Works Co., 2685 East 79th street, Cleveland 4, meets demand for a simplified, easily-operated molder suited for a wide variety of requirements. Plunger injection and mold closing of the machine are operated by hydraulic cylinders operated by a gear type pump. Latter is driven by a 2-hp electric motor that develops up to 1500 lb line pressure.

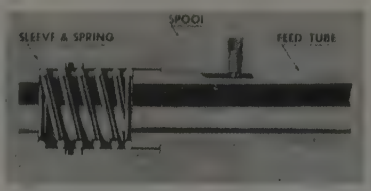
Automatic parts ejection is by means of a knock-out and ejector pin arrangement, eliminating handling of molds, speeding up removal of finished parts. Heating bands arranged in two zones maintain temperature in each zone within plus or minus 6° F. Range of thermostats is from 100° to 500° F.

Minimum mold thickness is 3 in. and maximum mold thickness 8½-in. Platen area is 8 x 8 in. and mold opening 6 in.

Steel 8/3/46; *Item No.* 9424

Automatic Feed Tube

Modern Collet & Machine Co., 401 Salliotte street, Ecorse 18, Mich., is announcing a line of shock-absorbing feed tubes for Brown & Sharpe automatics of all sizes and models that lack a spring safety device in feeding mechanism of



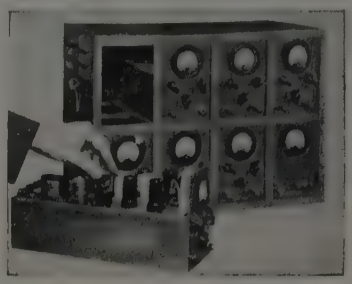
machine. With these feed tubes, forward movement of screw-machine feed latch is transmitted from spool to tube itself through a sleeve and helical compression spring, as shown in cut-away view.

Spring permits normal feed without deflecting. In case of interference with advance of feed tube, spring compresses and spool slides forward freely on tube, preventing breakage of feeding mechanism or damage to feed tube.

Steel 8/5/46; *Item No.* 9421

Climate Maker

A climate maker developed by American Instrument Co., Silver Spring, Md., produces in laboratory test chambers and small-size rooms average temperatures and humidities that prevail in most countries of the world. Called the Climatizer,



it may be used in testing performance and durability of devices and materials destined for use in almost any climate, and is valuable aid for calibrating, processing, assembling or packaging devices.

Necessary amount of water in instrument itself is maintained automatically. Heaters are totally enclosed in protective metal sheaths.

Steel 8/5/46; *Item No.* 9478

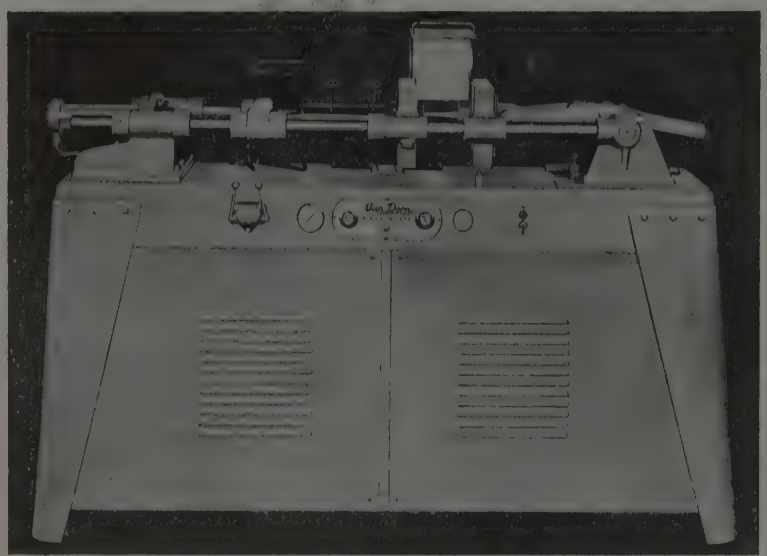
Tap Holder

A new self centering, full floating releasing tap holder, the Tool-Flex, manufactured by Burg Tool Mfg. Co., 6709 South San Pedro street, Los Angeles 3, eliminates binding which causes tap breakage and compensates for parallel and angular misalignment through its flexibility. Developed for use on screw machines and turret lathes, it has an oil resistant Neoprene insert.

Steel 8/5/46; *Item No.* 9422

Hydraulic Valves

Typical of the three valves for air and hydraulic controls designed by Hanna Engineering Works, 1765 Elston avenue, Chicago 22; is the packless ¼-in. valve called Unitite Jr., for tubing and light piping applications. Shown in illustration, it is designed for 4-way operation, but may be used as a 3-way valve by plugging one port. Suitable for air, oil, or water in pressures up to 250 psi, it is manufactured for mani-



(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 160.)

fold, column, or panel mounting.

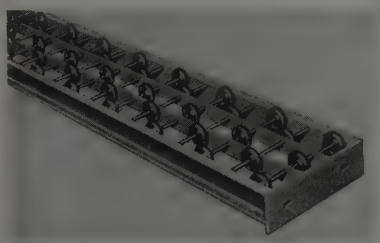
Foot-operated unit is for use in air and hydraulic cylinder applications. It is made in two styles, with single pedal for constant cycles of operation, and with split pedal that holds position until tripped for reversal. Offered in ⅜, ½, ¾, and 1 in. sizes, on 250 psi air pressure or 1000 psi oil pressure.

Control of cylinder piston speed in both directions is accomplished by 2-direction speed control valve which controls inflow and outflow of air or oil independently to and from one side of piston. Working pressures are the same as for foot-operated valve.

Steel 8/5/46; *Item No.* 9409

Conveyor

Production of a new rust-proof, dust-proof, portable conveyor is announced by E. W. Buschman Co., Cincinnati 32. Unit is protected against wet, dusty and corrosive conditions as well as outside use.



Treads and hubs of conveyor wheels are protected with a heavy zinc plate and side disks are red baked enamel. An inner seal excludes water, dust, grit or other foreign matter from full ball bearing.

Conveyor is made in 5 and 10 ft lengths as well as 90, 60, 45 and 30 deg curves with an inside radius of 2 ft 6 in. Curves are reversible and are supplied with guard rails on the outside and adjustable center leg supports. Weight of the conveyor is approximately 7 to 8 lb per foot.

Steel 8/5/46; *Item No.* 9475

Surface Pyrometer

A new surface pyrometer marketed by Pyrometer Instrument Co., 103 Lafayette street, New York 13, features a selection of eight types of thermocouples, all interchangeable without adjustment or recalibration, for surface temperature problems in a variety of industries. Completely self-contained, portable, compact and quick-acting, instrument is constructed in a shock, moisture and dust-proof shielded steel housing immune to external magnetic influences.

Instrument has selection of five temperature ranges from 0 to 300° F. to 0 to 1200° F. Internal automatic cold and junction compensator is incorporated into design.

Steel 8/5/46; *Item No.* 9440

Connecting Rod Machine

A special purpose machine designed by Snyder Tool & Engineering Co., 3400 East Lafayette, Detroit 7, mills and weighs connecting rods in the balancing operation without necessity of removing rod from machine. Fixture for rod is attached to two scales which register amount of overweight at either end of rod. End stops for depth of cut are adjusted by handwheels on which reading is set to correspond with readings on two scales.

With adjustment set, machine goes through its cycle which consists of automatically clamping part in fixture in fixed location, rapidly advancing of both milling units against their adjusted solid stops and feeding milling cutters through work. Cutters then pull away from work, clamps release automatically and work piece hangs on scale rods for weighing.

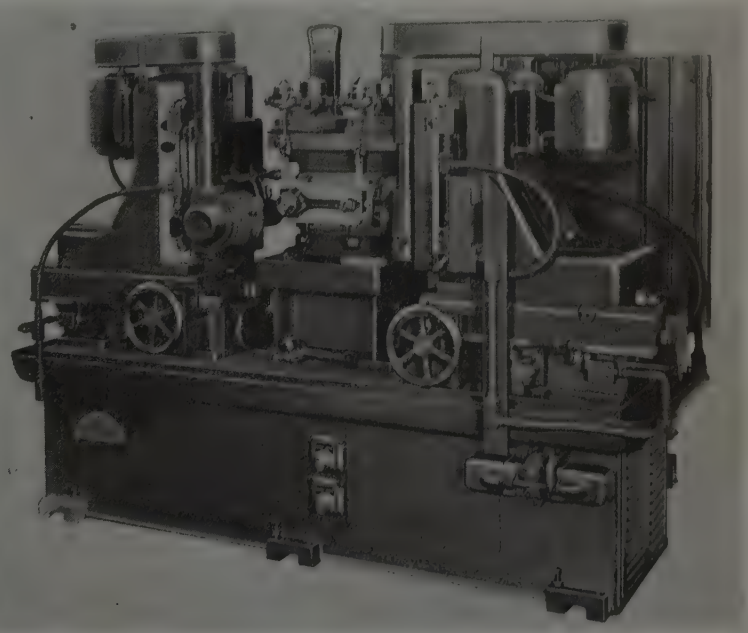
Machine will take rods varying from 7 to 13 in. in length. Milling units are adjusted for different connecting rod lengths and for cutter wear. Stock is milled off connecting rod at both ends with end milling and slab milling cutters, depending upon shape of stock to be removed.

Steel 8/5/46; *Item No.* 9448

Hydraulic Cylinder

Nonrotating hydraulic cylinders manufactured by Anker-Holth Mfg. Co., Port Huron, Mich., have one piece, step-seal piston rings, no tie rods and cushioned cylinders with no increase in overall length. Designed for low pressure operation up to 750 psi and high pressure operation to 2000 psi in oil or water service, cylinders have a safety factor of 6 to 1.

Available in sizes ranging from 1½

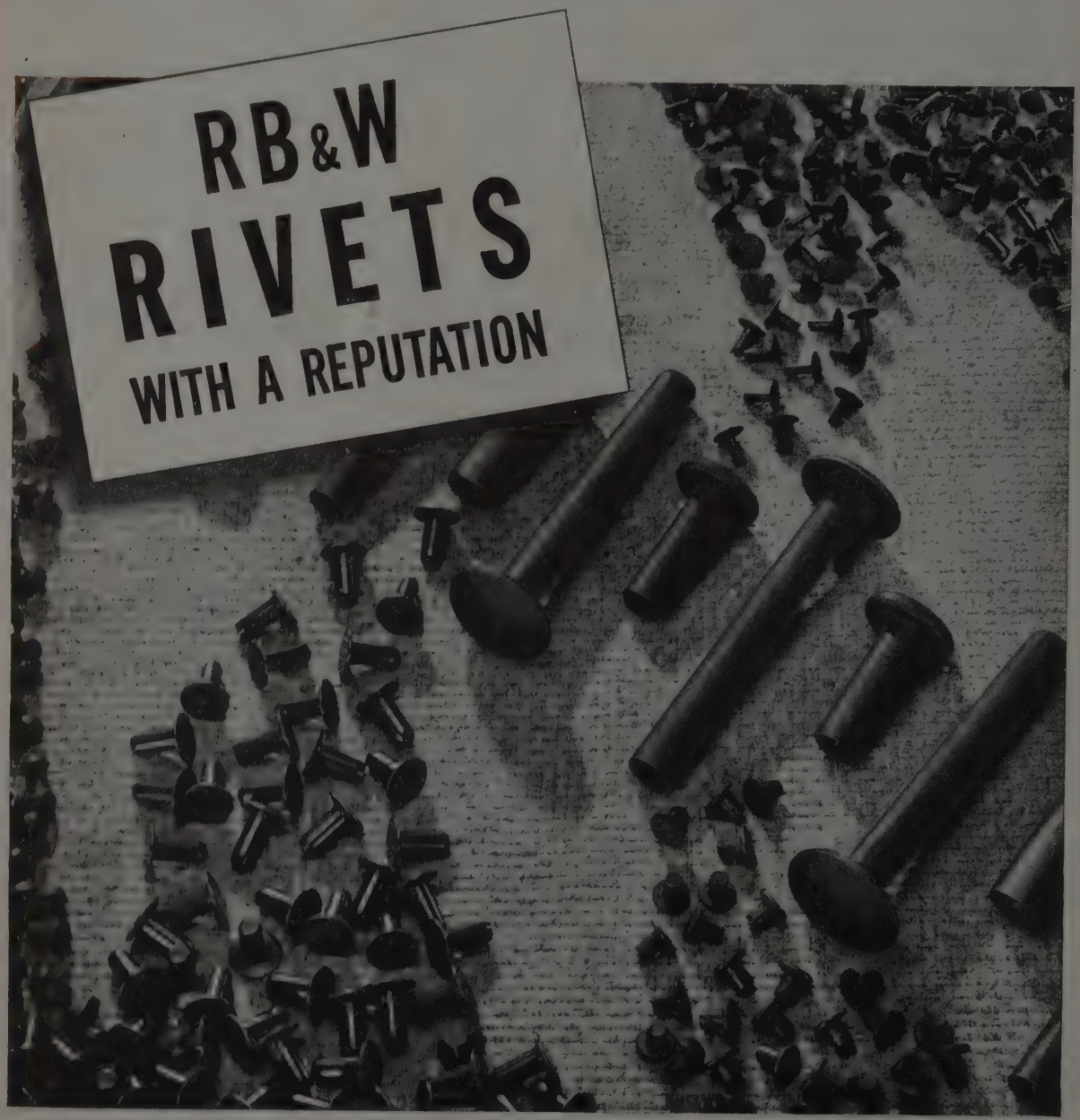


(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 160.)

THE FACT that *every* rivet can be counted on for well-formed, on-center heads; round, close-tolerance shanks; uniform lengths; and freedom from scale and foreign matter that would interfere with automatic feeding . . . has given RB&W its reputation for high-quality rivets and has made RB&W one of the world's largest manufacturers of small rivets.

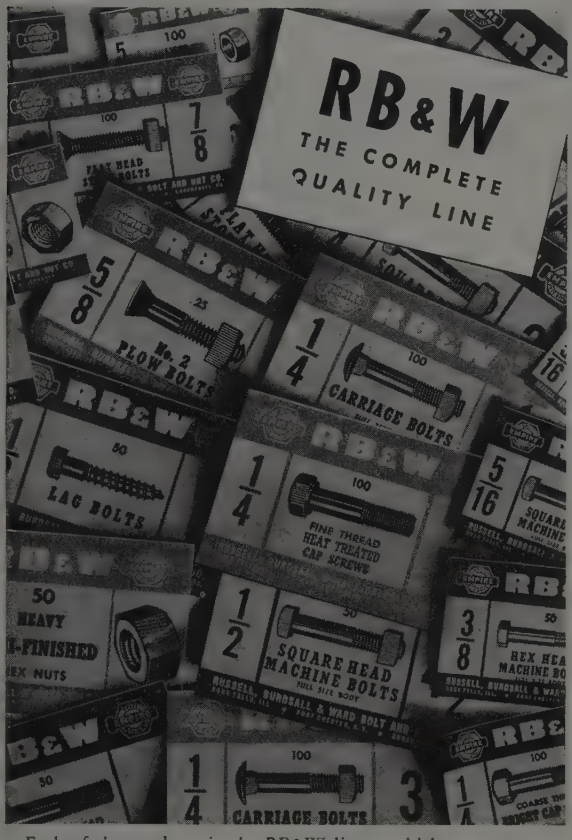
RB&W's program for developing its manufacturing facilities during the next two years includes the installation of many new high-production rivet headers which will substantially increase capacity.

Such investments in new machinery are typical of RB&W's policy of using modern research, manufacturing and quality control methods in order to deliver to its customers bolts, nuts, screws, rivets and allied fastening products that will save time in assembly, provide an extra margin of holding power, and will conform to the customers' requirements for fine appearance.



ACCURATE WIRE — First step in assuring close control over dimensions of rivets and bolts is drawing the wire. RB&W draws its own wire, and the use of tungsten carbide dies guarantees extremely close tolerances.

ANNEALING—In gas-fired batch-type draw furnaces, RB&W rivets are annealed to remove cold heading stresses and to assure proper hardness. These furnaces are accurately controlled to provide thorough and accurate heating.



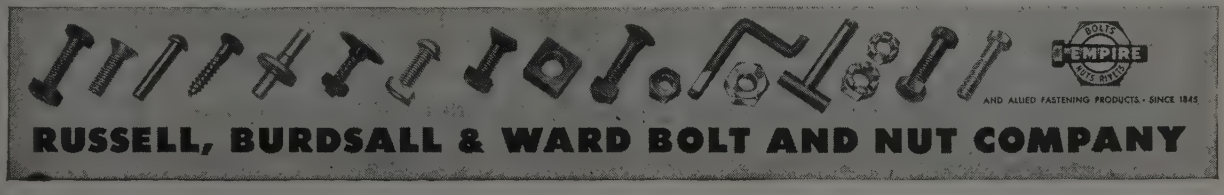
Each of the products in the RB&W line — which covers a complete range of fastening requirements — has been engineered to high standards of accuracy, strength and appearance.

CLEAN RIVETS — Tumbling RB&W rivets makes them smooth and clean and removes all foreign matter. Free from scale and dirt, these rivets feed freely in automatic machines and provide a positive metal-to-metal contact in the rivet hole.

STOCK ROOM—under normal conditions, prompt deliveries are assured from a large and complete inventory of all stock-production sizes. Handling facilities are of the most modern type.

101 YEARS *Making strong the things that make America strong*

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. *Sales Offices at:* Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle, *Distributors* from coast to coast. By ordering through your distributor, you can get prompt service for your normal needs from his stacks. Also, the industry's most complete, easiest-to-use catalog.



to 8 in. bore, the following mountings are made: foot, trunnion, center line, clevis, flange and adapter. Any stroke length is possible with standard, oversize or double-end rod.

Steel 8/5/46; *Item No.* 9438

Load Cart

Market Forge Co., Everett 49, Mass. has designed load cart for handling coal, sand, steel stampings and similar aggregates. Equipped with 16-in. diameter ball bearing pneumatic rubber-tired wheels cart has drop side that locks in closed, half-open or fully opened position.

Capacity when handling such materials as coal is approximately 1000 lb, volume

being 22½ cu ft. Inside dimensions are: Length 60 in., width 36 in., depth 18 in. Height of bottom above floor is 18 in. and overall height is 36 in. Wheels are also offered in semisteel or cushion rubber. rubber.

Steel 8/5/46; *Item No.* 9418

Compressed Air Valve

Numatics, Milford, Mich. is offering 4-way, hand-controlled, compressed-air operated valves of the full-port 2-poppet type. Ports are all on one face with both outlet connections at one end to facilitate piping.

As all working parts are contained in upper housing, installation of valves can be made permanent. Use of sub-bases or mounting brackets are unnecessary. To service, housing containing mechanism can be lifted from permanently-fixed base. Valves, identified as the H-4 series, are manufactured in six pipe sizes from ¼ to 1¼-in., locking or nonlocking.

Steel 8/5/46; *Item No.* 9423

Liquid Cooler

Cooling of water or any aqueous solution to the lowest possible temperature above freezing for industrial uses is possible with new liquid cooler announced by Niagara Blower Co., 6 East 45th street, New York. To provide temperatures below freezing, coolers may be operated with Niagara No Frost liquid solution.

Nozzle arrangement sprays cooling water thoroughly over banks of coils in which refrigerant is expanded. Water is circulated independently of distributing system, thereby gaining close control over temperatures regardless of intermittent cooling operations or variations in load.

The production of 33° water is possible without danger of freezing, as system does not depend for safety on proper functioning of back pressure regulating valve.

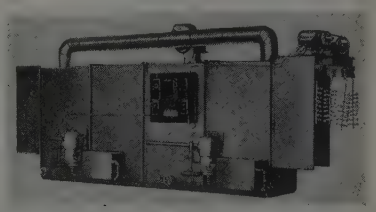
Sizes with refrigeration capacities from 10 to 135 tons are offered. Water deliveries range from 24 to 465 gpm according to the requirements of the user.

Steel 8/5/46; *Item No.* 9378

Washing Machine

Optimus Equipment Co., 177 Church street, Matawan, N. J., is introducing a continuous type washing machine for handling large numbers of metal parts on racks, before plating, painting or any similar process. It will handle any type parts, provided they are free-draining, and sprays have free access to parts being processed.

Machine can be used as a single stage washer, or it can handle a number of successive operations. With slight alterations,



it can take care of a series of different operations — washing, rinsing, drying, pickling, cyanide treatment, etc.

Machine design allows it to be connected to an exhaust blower. It can be heated by steam, gas or electricity. A number of manifolds with spraying nozzles are mounted on all sides of washing chamber. Solution circulation system includes a pump, piping, series of filters and strainers to filter the solution before it is taken by the pump. Its conveyor is an overhead chain type winding around two end sprockets driven by motor and speed reducer with variable speed pulley.

Steel 8/5/46; *Item No.* 9444

FOR MORE INFORMATION on the new products and equipment mentioned in this section, fill in this form and return to us. It will receive prompt attention.

Circle numbers below corresponding to those of items in which you are interested:

9396	9424	9440
9466	9421	9448
9402	9478	9438
9474	9422	9418
9442	9409	9423
9525	9475	9378
9633		9444

8-5-46

NAME..... TITLE.....

COMPANY .....

PRODUCTS MADE .....

STREET .....

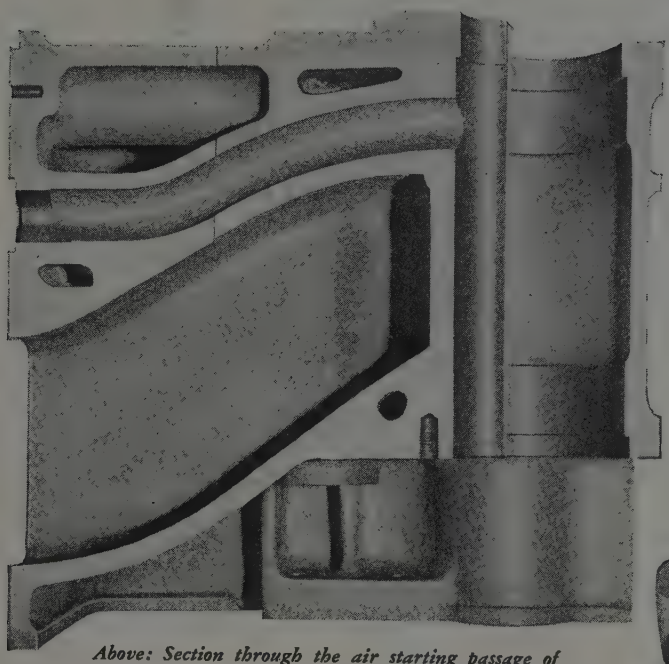
CITY and ZONE..... STATE.....

Mail to: STEEL, Engineering Dept.—1213 West Third St., Cleveland 13, Ohio

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on this page.)

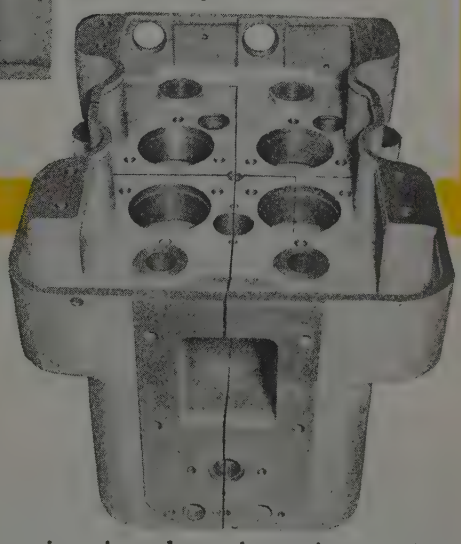
IN COMPLEX CASTINGS MEEHANITE ASSURES

Density and Solidity



Above: Section through the air starting passage of large 4-valve Diesel Head made of Meehanite Metal

Below: Large 4-valve Diesel Head made of Meehanite Metal



Engineering characteristics of a casting are determined by achieving uniform metal structure throughout all sections. Shrinkage problems common to molten metal during solidification are influenced by the degree of variations in sectional dimensions. Changes in section thicknesses such as those in the Diesel head casting illustrated result in a lack of uniformity, shrink zones, porosity, hardness variations and machining difficulties.

Meehanite manufacturing methods have been devised to overcome these ill effects with the result that complex designs such as the one shown may be produced with not only dependable physical properties, but uniform density and solidity, assuring pressure tightness and dimensional accuracy.

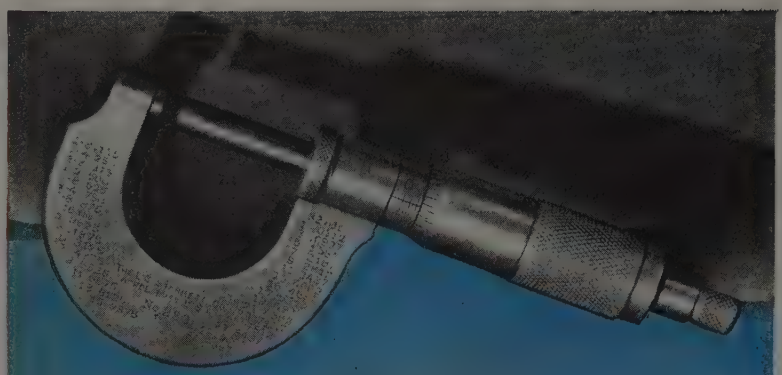
The casting pictured contains sections ranging from ¼" in the frame, head passages and cylinder walls, to 2" on the firing face of the cylinder head. All passage ways had to be water-tight and close tolerances maintained. Hundreds of these castings are being produced regularly and successfully in Meehanite.

Write for Bulletin No. 22 entitled "Stories of Meehanite in Industry."

New 16 mm motion picture "Meehanite Means Better Castings" just released. We will be glad to lend you a print.

MEEHANITE

PERSHING SQUARE BUILDING, NEW ROCHELLE, N. Y.



A CLARK
is a precision instrument, too!

PROPER MATERIAL HANDLING is a precision problem that assumes a new importance as production costs rise. Executives now convert unskilled labor to more profitable work by use of CLARK industrial haulage vehicles to carry, lift and tier materials.

Handling costs reach new "lows" as CLARK fork trucks and tractors move loads between docks, warehouses and production lines.

Let a CLARK engineer help you work out a plan to speed movement and reduce costs—no obligation.

CLARK
FORK TRUCKS LIFT
DUMP TRACTORS TOWING
Gas and Battery Powered

CLARK TRUCTRACTOR
Division of CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN
OTHER PLANTS: BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN

Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS

Lead Welding

(*Continued from Page 122*)

welding which is an extremely difficult operation. Also the lower part of the joint will not be so strong as the upper part. Among methods that are more satisfactorily used in this case is the use of a lap joint. In this method the ends of the pipe to be joined are cut at a sharp angle with the point of the angle on the female end at the bottom of the joint. This forms a ledge on which the welding operation is executed. The procedure leaves only a single small spot at the point of the female end where it is necessary to weld in an overhead position. Another method is to slit the top of the joint, allowing access to the inside lower part of the joint which is welded on the inside.

Even though an engineer responsible for designing equipment may not be a lead welder, a knowledge of the foregoing points will aid him in reducing the cost and increasing the serviceability of the equipment. For example, he can design the equipment so that much of the lead welding is done on the flat. This not only increases the ease and speed of welding, but also results in a stronger joint. Often too, on large equipment space may be provided to permit welding from above in making a flat joint, rather than from underneath requiring overhead work. Piping also may be sectionalized so that only a few joints are made in position, the balance being done by rolling the pipe.

Knowledge of Faults Essential

Inspection of lead welding also requires some knowledge of fundamentals. For instance, a common fault is skin or surface welding, particularly in heavy lead. The inspector should make sure that welds penetrate the thickness of the metal. Also care should be taken to see that the lead adjacent to the weld is not cut and thinned. Cleanliness is another important factor. If the lead is not cleaned or is improperly cleaned, dirt and oxide inclusions will be found in the weld metal. An improperly adjusted flame, which should always be slightly reducing, also provides oxide inclusions.

Although practically all lead welding is flame welding, attempts are being made to determine the commercial practicability of spot welding. At Westinghouse, for example, engineers are studying possibilities of spot welding lead to lead, and lead to terne plate for use in the construction of x-ray equipment. It appears that if pressure, time and current are carefully controlled, spot welding of lead is entirely feasible. Formulas worked out for calculating these factors now exist for different thicknesses of metal.

Whether spot welding of lead will become commercially important remains to be seen.

Lead's Reaction To Corrosive Chemicals

Acetic Acid—Moderately corrosive to lead but corrosion is greatly accelerated by high concentrations and temperatures. Acetic anhydride and glacial acetic acid are handled in lead.

Acetone—Lead used satisfactorily.

Acetylene—Has little effect on lead.

Alcohol, Ethyl—Does not affect lead.

Alcohol, Methyl—Does not affect lead.

Aluminum Sulphate or Alum—Lead used satisfactorily.

Ammonia—Lead is unaffected by the dry gas, and by the liquid unless sodium or potassium are dissolved in it.

Ammonium Azide—Does not affect lead.

Ammonium Chloride—Lead may be used at ordinary temperatures with concentrations up to 10 per cent.

Ammonium Hydroxide — Lead satisfactory with liquid or gas at practically all temperatures and concentrations.

Ammonium Phosphate—Lead used satisfactorily.

Ammonium Sulphate—Lead used freely.

Antimony Chloride—Lead is somewhat corroded, but is used with comparative economy for chlorinating the tri-chloride to the pentachloride.

Bensyl Chloride—Lead used satisfactorily.

Boric Acid—Lead used satisfactorily.

Brine—(see sodium chloride).

Bromine—Lead may be used when cold and acid free.

Calcium Carbonate—Found in natural waters and forms a good protective coating on lead. Added to water to reduce plumbo-solvency.

Calcium Hydroxide—Presence in green cement corrodes lead in presence of moisture and oxygen. However, added to soft waters reduces plumbo-solvency.

Carbonates, Soluble—Act as a protection to lead by formation of lead carbonate coating.

Carbon Dioxide—Acts as a protection to lead in natural waters unless present in excess, when it increases solubility. Lead is used in acid-carbonate systems of generating CO_2.

Chlorinated Hydrocarbons—Action on lead varies from slight to severe depending upon breakdown to HCl and presence of organic acids.

Chlorination Processes—Lead is slowly corroded at temperatures usually used, but has satisfactory life compared with other common metals and greater economy.

Chlorine—Dry does not affect lead and lead may be used with moist chlorine up to about 110° C with slight corrosion. Amounts of chlorine used in water treatment do not affect lead.

Chromic Acid—Since chromates form a good protective coating on lead, lead may be used with fairly high concentrations of this acid. Antimonial lead is widely used in electroplating.

Cinders—Lead embedded in cinders should be protected.

Coal Tar—Lead used in refining and recovery of many by-products.

Concrete, Cement or Mortar—When green, free lime present attacks lead. Aging to carbonate lime or applying asphalt coating on lead recommended to prevent such corrosion.

Copper Sulphate—Lead is used for anodes and tank linings in electroplating.

Ether—Little or no effect on lead. Used in its manufacture.

Ferric Sulphate—Lead is used in dissolving pots.

Ferrous Sulphate—Lead used for tank linings and coils in production and use.

Formaldehyde (Formic Acid)—Action on lead similar to that of acetic acid.

Hydrochloric Acid—Use of lead is not generally recommended but it has been used with some corrosion in concentrations up to 30 per cent at normal temperatures and 20 per cent at 100° C. Antimonial lead shows better resistance than ordinary lead.

Hydrofluoric Acid—Lead is commonly used, has fair resistance to dilute acid.

Hydrogen Chloride (Anhydrous Hydrochloric

Recently a TRIPLEX buyer told us, "I prefer TRIPLEX for toughness because I believe the most important thing in threaded fasteners is stronger holding power." He learned from experience that TRIPLEX Cap and Set Screws, Nuts and Bolts are made of the finest steel available for the purpose. Cap Screws are made in all four heads and in all standard lengths up to 8 inches. Write us today and you'll soon be going the TRIPLEX way. Don't forget to ask for our free wall chart.

THE TRIPLEX SCREW COMPANY • 5341 Grant Ave., Cleveland 5, Ohio

TRIPLEX THREADED FASTENERS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

For years the double helical principle was exploited to an angle of 23 degrees; beyond that it was limited.

The Sykes generators impose no limits on the maximum helix angle. Therefore, 30° helix angle was chosen as standard. The full benefit of the helical principle is obtained with the 30° helix angle. Overlapping of the teeth is obtained with a face width of only 10.88 divided by the diametrical pitch, so that wide faces in proportion to the pitch are now optional, not compulsory. The best proportion can be chosen for each individual case—some gears will have as many as four, or even more, teeth in contact.

OTTUMWA can furnish Sykes continuous tooth herringbone gears up to 10' 2" diameter, 24" face, and in all pitches up to 1¼ D.P., in steel or semi-steel. We also cut blanks furnished by our customers.

Write for our catalog—it shows a complete line of gears, together with a complete line of speed reducers and increasers for all types of industrial drives.

ESTABLISHED 1867

OTTUMWA
IRON WORKS
ENGINEERS • FOUNDERS • MACHINISTS
OTTUMWA, IOWA, U. S. A.

Acid)—It has very little effect on lead.

Hydrogen Peroxide—Alone not likely to affect lead, but accelerates acid corrosion.

Koch Acid Reduction Mass—Lead may be used safely.

Magnesium Chloride—Corrodes lead as it does other metals.

Malachite Green Mother Liquor—No appreciable effect on lead at 80° C.

Mixed Acids—Mixtures of sulphuric and nitric acids can be used with lead at ordinary temperatures if water present is less than 30 per cent.

Naphthalene—Lead may be used.

Nitration Mixture of H-Acid—Lead is used with rather high corrosion.

Nitric Acid—Lead is not generally recommended with this acid, but is used with little corrosion when concentrations are above 80 per cent at normal temperature.

Nitro-benzol and Nitrochlor-benzol—Corrosive to lead.

Nitrocellulose—Lead widely used as in all rayon manufacturing processes.

Nitroglycerine—Lead used to handle spent acid.

Nitrosyl-Sulphuric Acid—Action on lead is least at specific gravity of about 1.5 to 1.6. Close control minimizes corrosion.

Organic Acids—In general, accelerate the corrosion of lead, but their presence in solutions does not always preclude the use of lead.

Oxygen—Dry gas merely tarnishes lead. In presence of water, initial attack is usually followed by formation of protective coating formed by salts such as carbonates, sulphates and silicates in water. In absence of these salts, aeration may be employed to remove oxygen because of its action on all metals.

Oxy-L Acid—Lead is corroded to some extent but is about the only economical metal that can be used with satisfaction.

Phenol—Lead used satisfactorily.

Phosphoric Acid—Lead may be used with concentrations up to 80 per cent below 200° C. Impure acid has even less effect on lead and can be used up to 85 per cent concentration.

Photographic Solutions—Lead generaly satisfactory.

Potassium Permganate—Attacks lead.

Pyridene—Does not affect lead.

Silicates—Form protecting coatings on lead and thus can be recommended for treating natural waters if necessary.

Sodium Bisulphate—Can be handled in lead when highly concentrated.

Sodium Carbonate—Dilute solutions do not affect lead: in natural waters forms protective coating on lead.

Sodium Chloride—Lead satisfactory for dilute solutions at ordinary temperatures. Sea water or brine are commonly handled in lead or antimonial lead.

Sodium Hydrosulphite—Lead can be used satisfactorily.

Sodium Hydroxide—Lead can be used with concentrations up to 25 per cent and temperatures to 80° C.

Sodium Hyposulphite—Lead can be used satisfactorily.

Sodium Hypochlorite—Attacks lead.

Sodium Sulphate—Lead can be used satisfactorily with solutions up to 10 per cent concentration boiling.

Sodium Sulphide—Lead can be used satisfactorily with these solutions at temperatures up to 100° C.

Sodium Sulphite—Lead can be used with solutions up to 20 per cent concentration at 25° C.

Sulphur Chloride—Has little effect on lead.

Sulphur Dioxide—Has little effect on lead when dry and can be used moist up to about 200° C.

Sulphuric Acid—Lead is the standard material for handling this acid. It can be used with concentrations up to 96 per cent at room temperature and 85 per cent up to 220° C. It is sometimes used satisfactorily even up to 250° C.

Sulphurous Acid—Lead is satisfactory up to about 220° C.

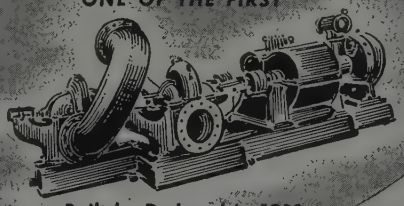
Tannic Acid—Somewhat similar to acetic acid.

Tartaric Acid—Somewhat similar to acetic acid.

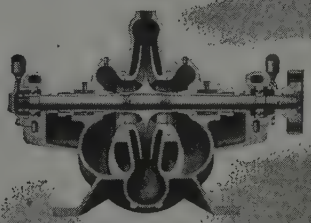
Thionyl Chloride—Lead is used satisfactorily

45 Years of PUMP IMPROVEMENT

ONE OF THE FIRST

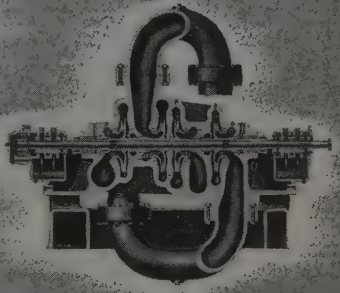


Built by De Laval in 1902

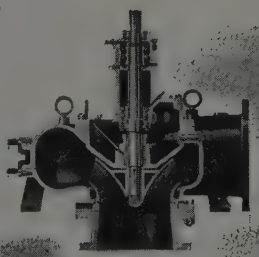


SINGLE STAGE, DOUBLE SUCTION PUMP

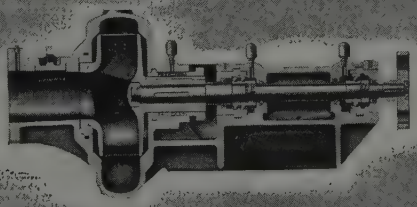
Modern De Laval centrifugal pumps represent the culmination of more than 45 years of continual improvement and perfection. This long period of concentration upon the problems of centrifugal pump design and application places at the user's command a complete line of modern, high quality pumps and a vast store of knowledge concerning pump application problems.



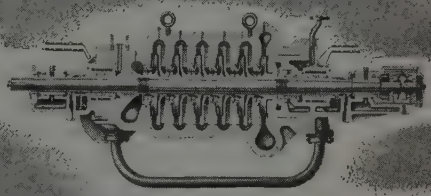
FOUR STAGE, OPPOSED IMPELLER PUMP



MIXED FLOW PUMP



CLOGLESS PUMP



HIGH PRESSURE, MULTI-STAGE PUMP

GP-1

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS • CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS AND COMPRESSORS • IMO OIL PUMPS

DE LAVAL

STEAM TURBINE COMPANY
TRENTON 2, NEW JERSEY

SALES DIVISIONS: ATLANTA • BOSTON • CHARLOTTE • CHICAGO • CLEVELAND • DENVER • DETROIT • DULUTH • EDMONTON • GREAT FALLS • HAVANA • HELENA • HOUSTON • KANSAS CITY • LOS ANGELES • MONTREAL • NEW ORLEANS • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • ST. PAUL • SALT LAKE CITY • SAN FRANCISCO • SEATTLE • TORONTO • TULSA • VANCOUVER • WASHINGTON, D. C. • WINNIPEG

up to 220° C. and sometimes higher.

Titanium Sulphate—These solutions can be handled satisfactorily in lead.

Victoria Green Mother Liquor—Lead may be used satisfactorily up to 80° C.

Water, Distilled—Dissolves lead very slowly in proportions to amount of dissolved oxygen.

Water, Natural—Usually no effect on lead because of protective coating formed from dissolved salts. Very soft waters or those of peaty origin may dissolve lead slightly, as they do other metals, and such action can be prevented by treatment of the waters with lime or sodium silicate.

Wood—Most wood has little or no corrosive effect on lead. A few instances of corrosion by wood containing organic acids, such as green oak, have been reported. Wood to be lined with lead should be inspected for presence of borers.

Zinc Chloride—Lead used satisfactorily.

REFERENCES:

"Lead 'Burning' or Welding," Robert L. Ziegfeld, Journal of American Welding Society, Sept., 1932.

"Lead Welding," W. Spraragen and G. E. Claussen, supplement to Journal of the American Welding Society, Feb., 1941.

"Chemical Plumbing and Lead Burning," E. B. Partington, The British Oxygen Co., Ltd., 1941.

"Welding Lead Sheets and Pipe," F. E. Rogers, Heating, Piping & Air Conditioning, Sept., 1936.

"Methods of Lead Welding Differ Widely from Practices with Other Metals," F. E. Rogers and W. H. Carter, Welding Engineer, Aug., 1936.

"Sheet Lead Welding Procedure," Sheet Metal Worker, March 18, 1932.

"Strength of Spot Welds in Lead, Lead Alloys and Terne Plate," J. Heuschkel, Product Engineering, Dec., 1945.

"Plumbers' Lead Forum," Lead Industries Association, issues from June, 1942 to winter, 1944-45.

Approved AISI Structural Standards Promulgated

Simplified Practice Recommendation R216-46, covering "Hot-Rolled Carbon Steel Structural Shapes," has been promulgated by the Bureau of Standards' Simplified Practice Division. The recommendation takes the form of a 22-page booklet, of which copies may be obtained from the Superintendent of Documents, Washington 25, at 10 cents each.

The recommendation was proposed by the technical committee on carbon steel plate and structural shapes, of the American Iron and Steel Institute. It has been accepted by all of the manufacturers of structural shapes, and by representative distributors and representative consumers. Its contents will be cross-referenced in the the Steel Product Manual of the American Iron and Steel Institute.

The program, composed of 19 tables, covers the nominal sizes and weights per linear foot of wide-flange sections, light beams, stanchions, joists, standard beams, H-beams, wide-flange bearing piles, channels, and tees, with angles being shown in thicknesses. Sections and angles used in carbuilding and shipbuilding are also included. The products listed are those defined by the AISI Steel Products Manual as "structural shapes"—the general term used in the construction field.

Buy **HORSBURGH AND SCOTT RUGGED *and* DEPENDABLE SPURS**

★ Now, when time and working hours are really important, it pays more than ever before to buy gears that will stand the "gaff". Horsburgh & Scott Gears are accurate . . . husky . . . built to endure . . . "steel muscled" for hard work. You'll find proof in their performance and long, uninterrupted service.

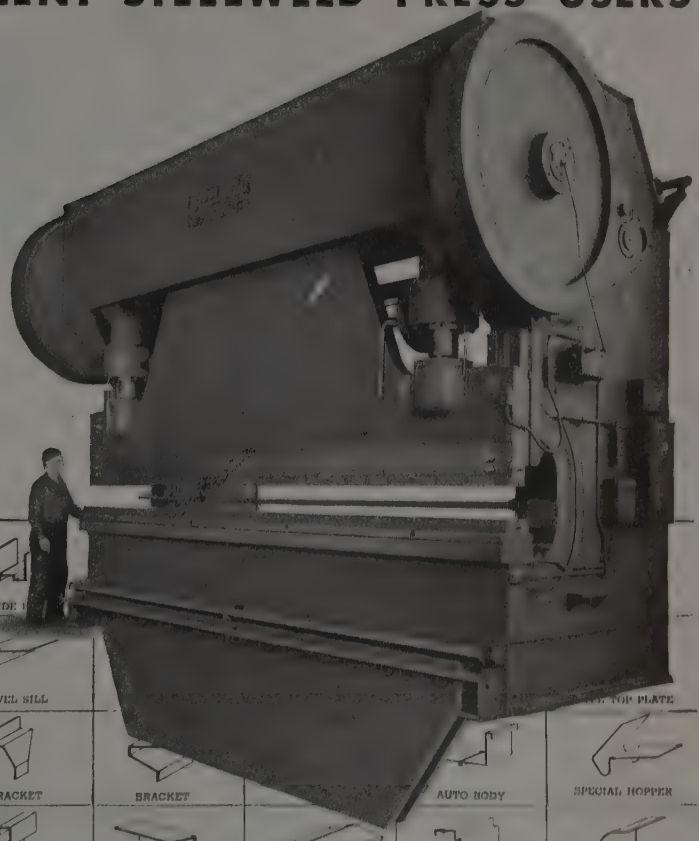
Send note on Company Letterhead for 488-Page Catalog 41

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND, OHIO, U. S. A.

WORDS FROM PROMINENT STEELWELD PRESS USERS



TROUGH | CURVED CHUTE | CHUTE | GUIDE PLATE

GUIDE PLATE | CONVEYOR PLATE | CAP PLATE | BEVEL SILL

DOUBLE BEND | MOULDING | BRACKET | BRACKET | BRACKET | AUTO BODY | SPECIAL HOPPER

SPECIAL BRACKET | OFFSET | FACIA | HOOK PLATE | SPECIAL BRACKET | DOOR RIDER | CURVED PLATE

STAIR BRACKET | BRACKET | GATE | TRUCK BODY RIDE

CLAMP | CURVE PLATE | BAR CLIP | BAR BRACKET

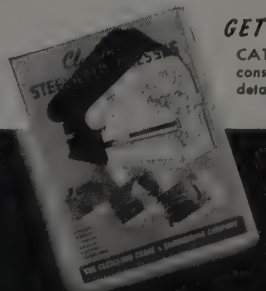
CURVED CONVEYOR | V-GUIDE | CURVED STRAP

CURVED PLATE | THRESHOLD | SPECIAL CURVE | FLANGE PLATE | FLANGE PLATE | GUARD PLATE

TAPER CHUTE | FLANGED IN PLATE | SPECIAL BRACKET | CHUTE | HOPPER | HOPPER | DOUBLE V BEND | BOILER BOX PLATE

FREEDOM FROM JAMMING RAM AND BREAKAGE OUTSTANDING FEATURE

"We can say that freedom from jamming down the ram and consequent breakage is one of the outstanding features of the Steelweld Brake."



GET THIS BOOK!

CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

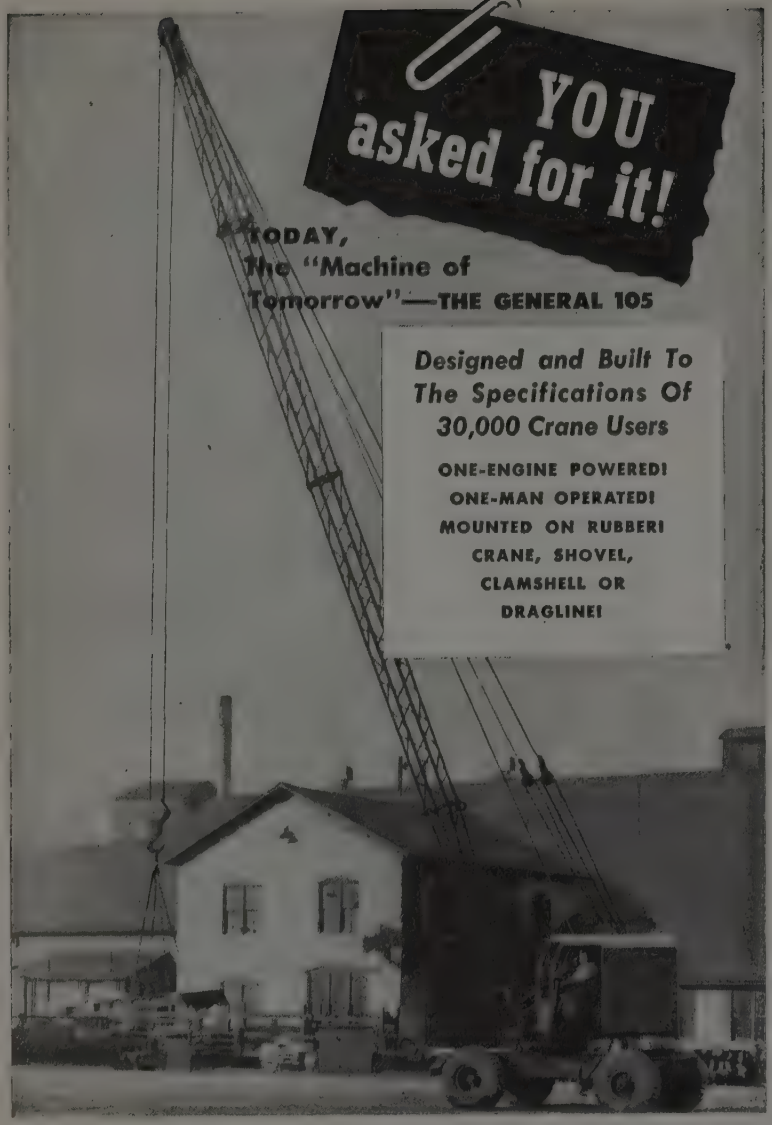
THE CLEVELAND CRANE & ENGINEERING CO.

1125 EAST 283RD ST. WICKLIFFE, OHIO.

STEELWELD

BENDING PRESSES

BRAKING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING


YOU asked for it!
TODAY,
The "Machine of Tomorrow"—THE GENERAL 105
Designed and Built To The Specifications Of 30,000 Crane Users
ONE-ENGINE POWERED!
ONE-MAN OPERATED!
MOUNTED ON RUBBER!
CRANE, SHOVEL, CLAMSHELL OR DRAGLINE!

• More work, in less time and at lower cost, means more jobs and more profits! With the General 105, jobs are completed on time and right because these husky units are built to turn in record performances on *all types of jobs,* including most of those you couldn't handle in the past.

The General 105, for example, was designed and built to meet the requirements of 30,000 crane users . . . men who know crane operation told the men who know crane design and construction what they wanted . . . and in the General 105, they've got what they asked for!

Write today for your copy of the "105 Comparison Folder" . . . it's packed with facts of interest to every crane user. Address The General Excavator Company, Marion, Ohio.

ONE-MAN CONTROLLED • ONE-ENGINE OPERATED • RUBBER-TIRED

THE OSGOOD CO. MOBILCRANES — THE GENERAL EXCAVATOR CO. SUPERCRANES

MARION, OHIO

Surgical Instruments

(*Continued from Page* 127)

better how steel is handled and used in these processes, it is well to consider these steps singly.

In most cases, the manufacturer starts with a 5/16-in. stainless steel bar—as in the case of the 10-in. Tum forceps. In some instances an outside factory may supply pieces on which preliminary work has been done. Blanks may range anywhere from 1 to 12 in., depending on the instrument to be made. And these may be 18-8, 410, 416 or 420, stainless steel.

In the manufacturing process, blank first is inserted in a furnace and heated to forging temperature of around 2200°F. It is then removed and placed in the lower die of the drop forging hammer. Fig. 6 shows heating furnace on the right and forging hammer, operated by means of a long wooden foot pedal, at the left. The two halves of one of the dies used, this one being for the Rochester artery forceps, are shown in Fig. 2.

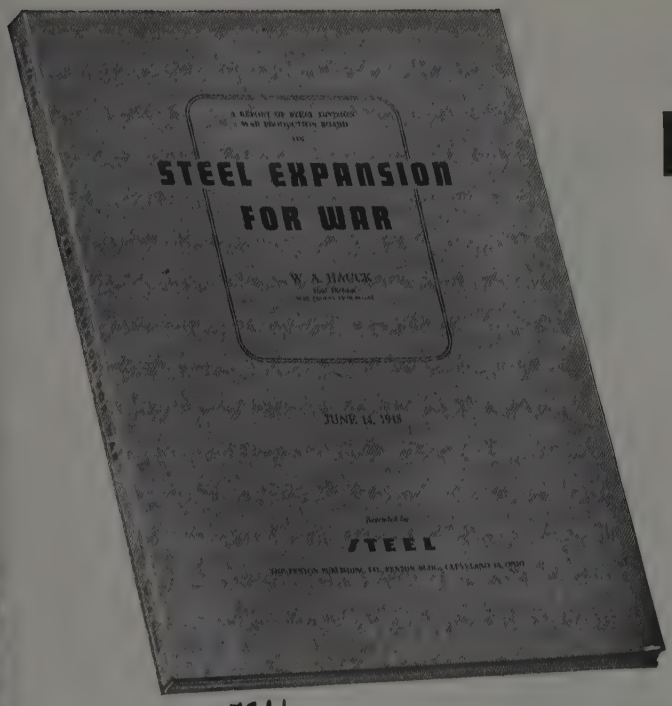
When the heated blank is placed on the lower half of the die, a 600-lb Merrill Brothers hammer shapes the instrument into its first crude form. Work next is removed and placed in a heavy set of hand shears which separate the instrument from the remainder of the bar.

After it has cooled sufficiently, piece is taken to the trimming press. Here, removal of flash generally is a single operation, but on the Rochester haemostatic forceps it is a double operation due to the fact both outside and inside flash must be removed from the ring of the forceps' handle. Thickness of flash removed in these operations varies from 0.001 to 0.030-in. Trimming press is a Niagara A3½ type, as shown in Fig. 5. Extent and variety of shapes encountered by the die designer in making trimming dies is demonstrated by the box-like trimming die for the O'Sullivan abdominal retractor in Fig. 3.

From the trimming press, the instrument passes to the work bench where it is shaped, ground and filed by hand tools. Serrations comprising the catch-lock (the protruding lugs which appear just below the ring handles on each half—Fig. 1) are milled into the instrument by a mechanical Multi-Katch cutter fed by hand. Circular cutting tools aid the operation by making it possible to feed the forceps sections into the catch-cutting device rapidly. By interlocking, the serrations milled into the instrument serve to hold the forceps firmly closed on a severed artery while surgeon is at work.

Front and back angles of the two forceps halves are milled next, whereupon an

Facts and Figures on New and Expanded Facilities of the Steel Industry are now revealed in



STEEL EXPANSION FOR WAR

By W. A. HAUCK

An official report by Mr. Hauck for the War Production Board

THIS 192-page handbook is an official report prepared for the War Production, the Reconstruction Finance Corporation and other government agencies.

Much heretofore unpublished information is presented on new and revamped facilities of hundreds of plants, including those in the ore, ore transportation, coal and coke, refractory, ferro alloy, scrap, foundry and forging industries.

The report provides details on types of products, capacity increases, plant locations, costs, etc. Included are 148 photographs, plus charts and tables.

NEW SUPPLEMENT—An 18-page supplement prepared by Mr. Hauck for the Reconstruction Finance Corporation and included at no extra charge—brings the report completely up-to-date. It will serve as a valuable reference for many years.

PRICE $2.00* SINGLE COPY

STEEL—Book Department
Penton Building, Cleveland 13, Ohio

Please send ..... copies of STEEL EXPANSION FOR WAR, by W. A. Hauck, postpaid. (Discount on 10 copies and over.)

☐ Payment is enclosed.
☐ Send invoice to company as shown below.

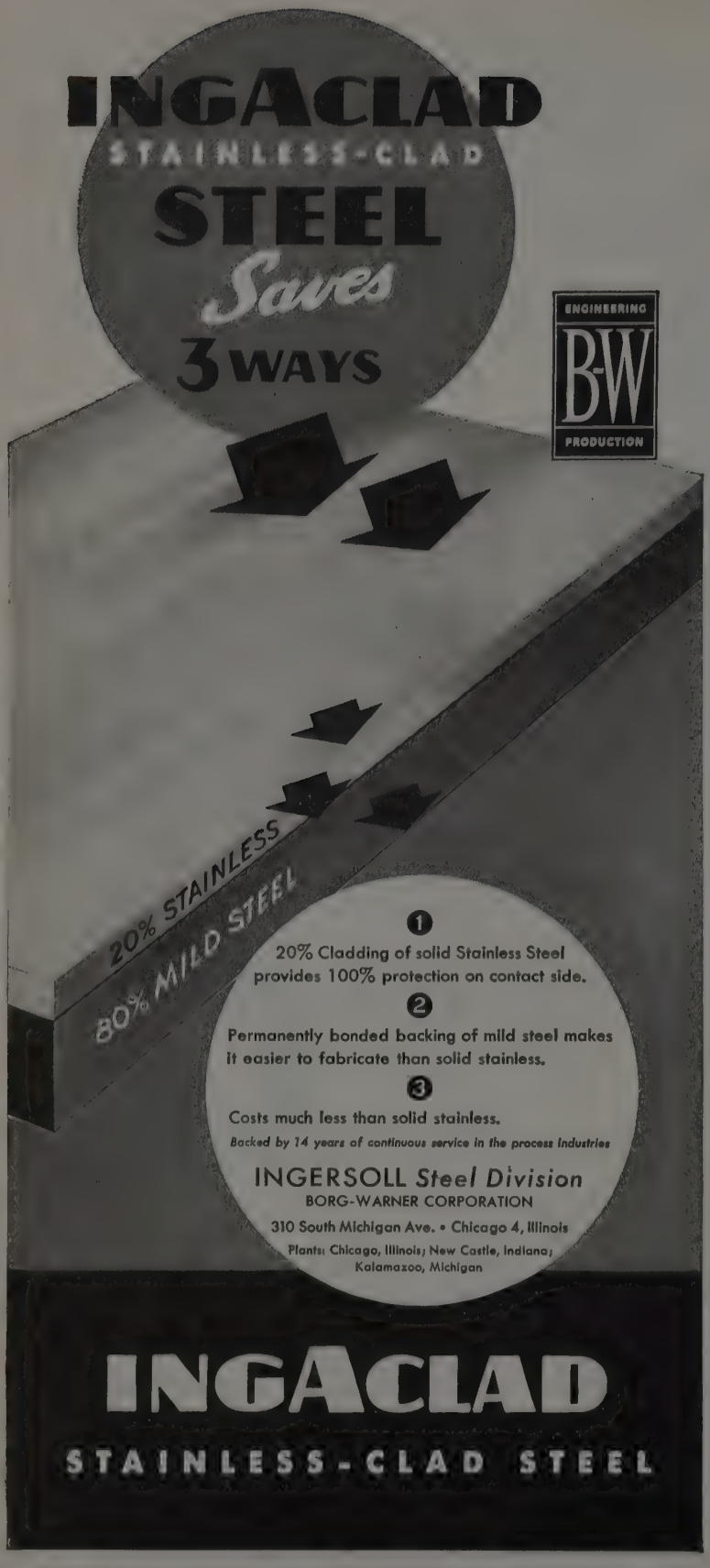
Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

*Please add 3% state sales tax on orders for delivery in Ohio



operation called "milling the singles and doubles" is performed. This is done by double cutters milling first one, then the other side of one forceps half at the joint, with a second machine cutting the opening in the other half section in order that it can be doubled over the first. Flash or waste pieces accumulated at the joints are cut away by broaching.

A special serrating cutter is next used to cut the serrations on the jaws of the instrument, if required (Fig. 1). These are the serrations that play the most important part in surgery when it becomes necessary to stop the flow of blood. Sixteen sets of teeth on a rotating cutter perform the work rapidly.

Fitting of joints by grinding and filing, involving considerable hand work, prepares the way for assembling the forceps. "Spreading the double" for assembly purposes is almost entirely hand work—perhaps more so than any part of the whole surgical instrument making process. An operator skilled at his job and with a sensitive feeling for the process, heats the double—judging the heat by the color of the metal—then spreads it by inserting a screw driver or other spreading instrument. While the double is still soft from being heated, the single is inserted and a hammer blow presses the double back into shape. Work is then riveted as illustrated in Fig. 4, showing the assembled forceps before and after riveting.

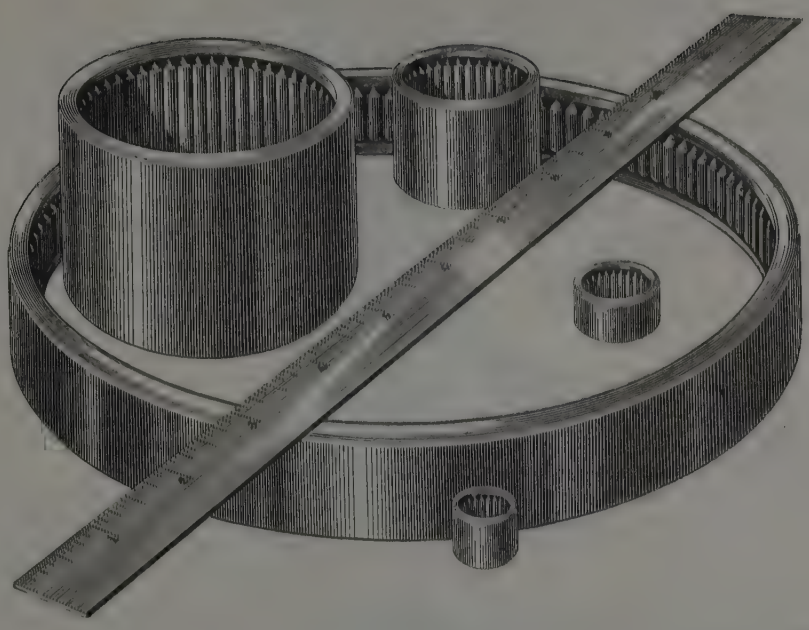
Temporary Rivet Used

At first a temporary rivet is used to hold the two sides of the forceps in position while the instrument passes through further steps of manufacture. Steps consist of hardening and tempering, pickling, nitric acid bath, polishing joints and, after removal of the temporary rivet, placing and setting the final rivet, then polishing, buffing, coloring, inspection and testing.

Most of the heat treating is delayed as long as possible in the manufacturing process. Some annealing is required to facilitate machining.

Hardening and tempering take place only after the two halves are joined and the temporary rivet put in place. Depending on steel used, the instruments are heated to temperatures ranging around 1800° F for 10 min for hardening, and about 600° for 15 min for tempering. The Haslam company finds this type of heat treatment very effective in producing the best combination of mechanical properties in its steels. Resulting tests yield a rockwell C reading of 40 to 42.

A hardening salt is used while the instruments undergo heat treatment. Thus, resulting scale is removed by pickling in a 40 per cent muriatic acid solution. After ½ hour of pickling, the instruments



How Big Should a Needle Bearing Be?

...Big enough to carry the load. But whatever the actual size required—the Torrington Needle Bearing is the most *compact* anti-friction bearing unit ever devised.

In relation to its radial load capacity it has the smallest O.D. of *any* comparable anti-friction unit—an important design advantage from the standpoint of space-savings and weight reduction.

Experience in hundreds of different applications has demonstrated the practical advantages of this high unit load capacity in terms of design improvement, increased operating efficiency, and manufacturing economy.

Ask our engineering department to translate these Needle Bearing features in terms of *your own design requirements*...to show you how *small* a bearing can be to give you all these advantages. Your inquiry involves no obligation.

THE TORRINGTON COMPANY

TORRINGTON, CONNECTICUT SOUTH BEND 21, INDIANA

Offices in All Principal Cities

TORRINGTON NEEDLE BEARINGS

Announcing...
THE NEW Silent Hoist
ELECTRIC CAPSTAN
CAR PULLER
ONE MAN OPERATION
LOW FIRST COST
LOW UPKEEP COST
GEARING INTEGRAL WITH MOTOR!
TWO SIZES . . . 5,000 LBS. CAPACITY
10,000 LBS. CAPACITY
AVAILABLE FROM STOCK
Powerful, compact, dirtproof, waterproof, foolproof! Equipped with SILENT HOIST totally enclosed worm gear reduction. Pulls and spots cars with ease. Standardization and mass manufacture make low price possible. Workmanship and materials guaranteed without reservation.
Write for prices and illustrated Bulletin No. 64 giving details and specifications.

Silent Hoist & Crane Co.
849 63rd ST., BROOKLYN 20, NEW YORK

THOMAS STRAIGHT SIDE PRESSES

FORMING - DRAWING
BLANKING
PIERCING
can be done with these up-to-the minute presses. They combine modern structural design with the usual Thomas inbuilt ruggedness and dependability. Wide range of sizes and capacities. *Write for Bulletin 307.*
THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH, 23, PA.

receive a further ½-hour bath in a 10 per cent nitric acid solution. The muriatic acid bath is given in a lead-lined steel tank while the nitric bath is in an earthenware vessel. The latter produces a gray color and causes metal to stand up to the copper sulphate test. Following this bath, the temporary rivet comes out, joints are polished and the permanent rivet is inserted.

Polishing is a careful operation. To polish the inside surface of the forceps handles, an emory strap in form of a power belt is run through each circular handle. A plain strap is used to give the inner portions of the handles a special color polish. Whatever cutting down is required is done by grinding or filing, then the whole instrument is buffed with a special buffing compound, washed and colored.

Obviously, no plating is needed for stainless steel, but all carbon steel, brass and copper sections receive nickel plating.

Generally speaking, all haemostatic forceps pass through the process described. Other instruments, such as retractors, pass through essentially the same process. The O'Sullivan abdominal retractor and the O'Sullivan-O'Connor vaginal speculum are entirely blanked out by dies on the Niagara A3½ power press, only the connecting screws and fasteners being otherwise produced.

Large surgical instrument manufacturers like Fred Haslam & Co., and J. Sklar Mfg. Co., the latter also of Brooklyn, design and produce many specialties of steel. Among these are the Jennings mouth gag, with a locking device to lock open the mouth for tonsil operations, or extractions of teeth, and the Balfour retractor.

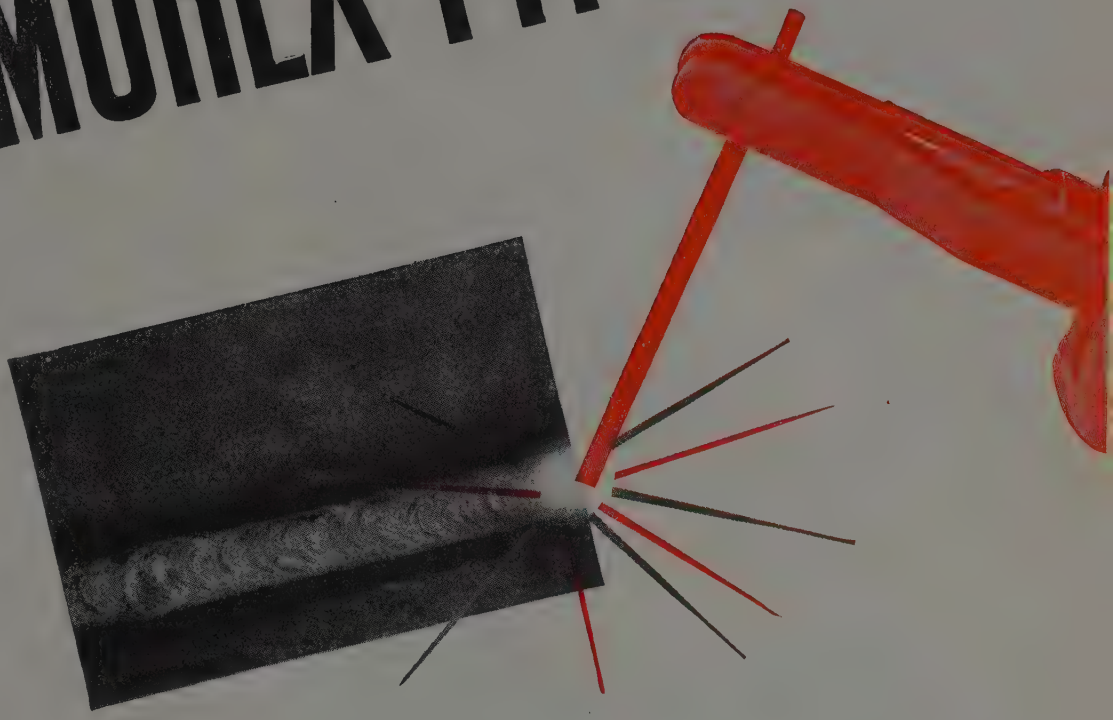
Electrode Chart Offered

Comparative bronze electrode chart, distributed by Ampco Metal Inc., Milwaukee, contains AWS-ASTM classification of bronze electrodes and the grade numbers of arc-welding rods produced by 15 manufacturers which meet various classifications. It is said to permit the user to select a type of rod that closely meets his requirements. Trade names and numbers also are listed.

New Ammeters Introduced

A new line of direct current moving vane type ammeters and voltmeters in which pointer oscillation is said to be reduced to a minimum by a lightweight high torque movement is announced by United States Gage Division of American Machine & Metals Inc., Sellersville, Pa. Dials have a scale length of 80 degrees of arc on center zero type and 60 degrees on zero off-center scales.

MUREX TYPE HTS



The Right Electrode for Hard-to-Weld Steels

Developed primarily to prevent underbead cracking when welding high tensile steels without preheating, Murex Type HTS is an all-position rod providing weld metal of 70,000 psi tensile strength with ductility and X-ray soundness equal to that of welds made with downhand electrodes.

Because of its moderate penetration and low pick-up of undesirable elements from the parent metal, it is particularly useful in welding high-carbon, high-sulphur and other difficult-to-weld steels.

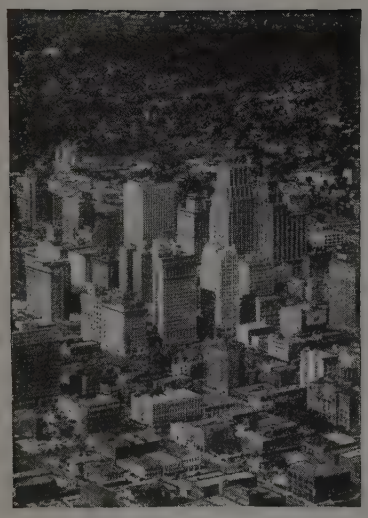
The complete facilities of our welding laboratory are available to help users of Murex electrodes achieve superior welds at lower costs. More detailed information on Type HTS or other widely-used Murex rods is available on request.

METAL & THERMIT CORPORATION

120 Broadway, New York 5, N. Y.

Albany • Chicago • Pittsburgh • So. San Francisco • Toronto

MUREX ELECTRODES



LET'S *Check* THE CITY OF

Houston, Texas

Today, all of Houston's portable water supply—millions of gallons daily—is supplied by Layne Wells and Pumps. More than 250 complete Layne Well Water units are serving the city and such places as Hotels, Theatres, Laundries, Packing Houses, Ice Plants, Rice Mills, Steel Companies, Iron Works, Cement Plants, Ship Building Yards, Bottling Plants, Light & Power Services, Oil Field Tool Factories, Paper Mills, Pipe Line Companies, Oil Refineries, Cold Storage Plants, Chemical Plants and Breweries. Such outstanding preference is an exceptionally fine tribute to Layne's skill in building high efficiency wells and pumps.

Behind Layne Well Water Systems are seventy years of engineering research and practical experience. These Systems embody basic Layne developed and patented features which cannot be duplicated by others. Such exclusive and thoroughly proven superiority has made the name Layne world famous.

For the latest catalogs and bulletins, address Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

HIGHEST EFFICIENCY

Layne Vertical Turbine pumps are available in sizes to produce from 40 to 16,000 gallons of water per minute. High efficiency saves hundreds of dollars on power cost per year.

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. * Layne-Atlantic Co., Norfolk, Va. * Layne-Central Co., Memphis, Tenn. * Layne-Northern Co., Mishawaka, Ind. * Layne-Louisiana Co., Lake Charles, La. * Louisiana Well Co., Monroe, La. * Layne-New York Co., New York City * Layne-Northwest Co., Milwaukee, Wis. * Layne-Ohio Co., Columbus, Ohio * Layne-Texas Co., Houston, Texas * Layne-Western Co., Kansas City, Mo. * Layne-Western Co. of Minnesota, Minneapolis, Minn. * International Water Supply Ltd., London, Ontario, Canada * Layne-Hispano Americana, S. A., Mexico, D. F.

LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

Abrasive Belt Grinding

(*Continued from page* 130)

you have the explanation of the growing popularity of abrasive belt grinding and polishing.

Bench Backstand Units: An abrasive belt machine that takes full advantage of these features is the bench backstand abrasive belt grinder and polisher (Fig. 8). Cutting rapidly, with a minimum of heating, these units allow a single operation to replace two or more grinding and polishing operations. For example, used in squaring up chipping irons and chisel points, the fast cutting belt rapidly removes forging and heat treat scale, while the uniform abrasive coating produces a surface requiring little if any final polishing. There are no "wild scratches to be polished out.

Used with dual density small diameter (6 to 8 in.) segment faced wheels, they do an outstanding job of deburring and finishing.

Note that, as with all backstand abrasive belt setups, the actual driving of the belt is done through the work or contact wheel. In this manner, the abrasive belt does not have to transmit any power as would be the case if it were driven by the backstand.

Abrasive Belt Swing Grinder: Just prior to this country's entrance in the war, a complete design for this machine was developed by engineers of the company. Here again dual density segment face contact wheels enable abrasive belts to turn out more and better work at lower cost. Reports from many plants reveal the removal of mold marks, welds and surface imperfections on steel plate, the removal of scale and splinters from armor plate, bars, billets, sheets and tubes in a fraction of the time required with ordinary equipment.

Perhaps typical is the job of grinding off a 16-ft weld on a large diameter heavy wall tube. Originally, after the weld had been chipped off with a cutting tool, it took two men with cup wheels and portable tools 35 min to grind the weld flush in the finishing operation. With a swing grinder using an abrasive belt, such as the unit in Fig. 13, one man grinds the weld from the rough and finishes it in 12 to 14 min.

One of these units, mounted on a floor stand with a foot pedal to bring the cutting surface in contact with the work, enables one man to do the work of five in grinding defects from the outer walls of heavy tubes. The ability of the segment face contact wheel to grind and stay in balance affords exceptional smoothness in running, and shock is eliminated in work contact. The wheel surface is firm enough to maintain positive abrasive action and provide the great cutting speed of an abrasive belt.

It is not unusual to find a swing grinder providing a smooth, clean, chatterless finish three to six times faster than possible by ordinary methods, because it combines the fast cutting of a conventional snag wheel with the smooth finishing of a portable disk sander. Suspended from an overhead trolley on a movable A frame, this type of unit can be moved to any part of the plant. Belt changes are simple, and all controls are within easy reach.

This equipment when used for grinding bar billets, produces strip or sheet with better surface conditions due to its smooth cutting and excellent finish. In one steel mill, for example, the cost of a conventional wheel for finish grinding a billet prior to rolling was $4.50 per wheel. While cost for abrasive belts for the job was $6, the output obtained per operator was four times as great and the resulting finish better.

Armor Plate Work: During the war abrasive belt machines were developed for grinding torch-cut beveled edges of thick armor plate for tank bodies. All burned metal had to be removed with perfectly angled and finished surfaces prior to welding. Extreme hardness of armor plate made it difficult to work, but because the abrasive mineral of a factory-coated abrasive belt was permitted to present its full profile of cutting, it cut rapidly and was able to do an outstanding job on this tough steel.

It was necessary to apply considerable pressure to cut this steel, and resultant heat generated was high. Thus machines employed a water-cooled back-up platen at point of contact. They also used a back-up belt, driven synchronously, running between the abrasive belt and the water-cooled platen to relieve the frictional load.

OD Tube and Shaft Grinder: Another type of machine using a contact roll and an abrasive belt is the tube and shaft grinder shown in Fig. 12. While this machine will not grind to accurate concentricity as will centerless grinders, it will grind at higher production rates where finish rather than accuracy is important. It tends to improve the concentricity of the ground part. It also has the important advantage in that stock to be ground does not need straightening. In addition, it can be set up to take plunge cuts on the work.

Some idea of the production abilities of such a machine can be had from the fact that 0.0035-in. of stock can be removed from the exterior of a 2 in. diameter tube or shaft at the rate of 20 to 35 lineal feet per minute.

Co-Operative Development: It should be emphasized that much credit is due

machinery manufacturers, steel producers, fabricators and industrial users for their co-operative work in the development of the improved abrasive belt machines described here. While Minnesota Mining & Mfg. Co. engineers instigated the development of many of the machines, the company's policy specifies that the user be told of every machine that will do the job, so he may make his own choice.

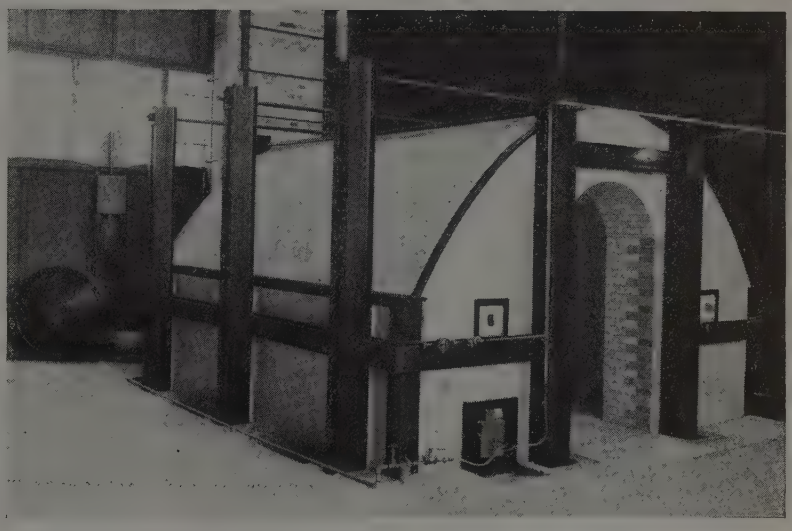
The company has patented many of their developments in order to protect themselves in freely bringing them to the attention of users and identifying themselves with these developments. Licensed to machinery builders, they are sold royalty free to users.

The only items furnished by the company are the segment face dual density contact wheels and other types of contact wheels suitable to industry's requirements, plus the all important abrasive belts to be used with them.

Machinery builders who co-operated with Minnesota Mining & Mfg. Co. in these developments include: Curtis Machine Co., Jamestown, N. Y.; Divine Bros. Co., Utica, N. Y.; Excelsior Tool & Machine Co., St. Louis; Gilmer Rubber Co., division of United States Rubber Co., Philadelphia; Hammond Machinery Builders, Kalamazoo, Mich.; Hill Acme Co., Cleveland; Ideal Roller & Mfg. Co., Chicago; Mattison Machine Works, Rockford, Ill.; Porter-Cable Machine Works, Syracuse, N. Y.; Republic Rubber, Youngstown; Ryman Engineering Co., (formerly Jones Engineering Co.), Ellwood City, Pa.; and Wright Buffing Wheel Co. (formerly C. B. Hunt & Sons), Lisbon, O.

Industrial firms who co-operated with the company in these developments include: Allegheny-Ludlum Steel Corp., Brackenridge, Pa.; Aluminum Co. of America, Pittsburgh; American Propeller Co., Toledo, O.; American Rolling Mill Co., Middletown, O.; American Steel and Wire Co., Cleveland; Babcock & Wilcox Tube Co., New York; Carnegie-Illinois Steel Corp., Pittsburgh; Carpenter Steel Co., Reading, Pa.; Cleveland Graphite Bronze Co., Cleveland; Crucible Steel Co., of America, Jersey City, N. J.; Eastern Stainless Steel Co., Baltimore; General Fireproofing Co., Youngstown; Globe Steel Tube Co., Milwaukee; International Nickel Co., New York; National Tube Co., Lorain, O.; Republic Steel Corp., Cleveland; Sharon Steel Corp., Sharon, Pa.; Southern Equipment Co., St. Louis; Standard Steel Spring Co., Coraopolis, Pa.; Tubular Products Co., Southington, Conn.; Universal Cyclops Steel Corp., Bridgeville, Pa; Wallingford Steel Co., Wallingford, Conn.; and Youngstown Sheet & Tube Co., Youngstown.

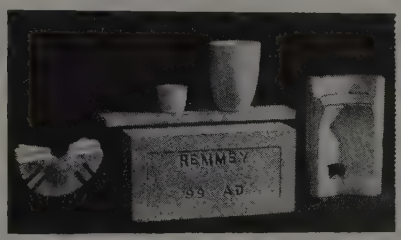
TWO NEW
SUPER REFRACTORIES
FIRED TO CONE 35



Kiln for firing Remmey 99AD & Crystalite A Refractories to Cone 35

REMMEY 99AD BRAND
Over 99% Alumina

CRYSTALITE A BRAND
Recrystallized Mullite



REMMEY 99 AD BRAND made of pure chemically precipitated alumina, without clay bond. Analyzes over 99% Corundum.
Corundum, the Crystalline form of Alumina, is more resistant than any other refractory oxide to many types of slag.
Firing to Cone 35 makes Remmey 99 AD Refractories hard and tough.
Modulus of rupture 2800 lbs. P.S.I. P.C.E. 42.

CRYSTALITE A BRAND is fired to Cone 35 to produce a composition closely approaching an all Crystalline Mullite Body. Due to this Crystalline Structure "Crystalite A" Refractories are highly resistant to glass furnace slags and other destructive slags.
Load test shows zero subsidence at 2950° F. P.C.E. 40.

REMMEY

RICHARD C. REMMEY SON CO., PHILADELPHIA 37, PA.

Representatives: Vitrefrax Corp., Los Angeles 11, Calif., John G. Seanor, Pittsburgh 16, Pa.

The Business Trend

Industry Gains Headway In Overcoming Shortages

INDUSTRIAL PRODUCTION continues to gain strength, although shortages of materials and transportation are obstacles to capacity operations in various segments of industry.

The automobile industry is setting new postwar highs in production but is hampered by materials shortages from attaining even better levels. Another effect of shortages is a slight reduction in steel ingot production by scarcity of scrap and insufficient railroad cars to serve the steel industry. Among indicators of strengthening industrial activity are the current high levels of railroad carloadings and electric power distribution.

Also reflecting the high level of activity is STEEL's industrial production index which for the week ended July 27 registered 149 per cent (preliminary) of the 1936-1939 weekly average. Level for the previous week was 148 per cent, which was a postwar high.

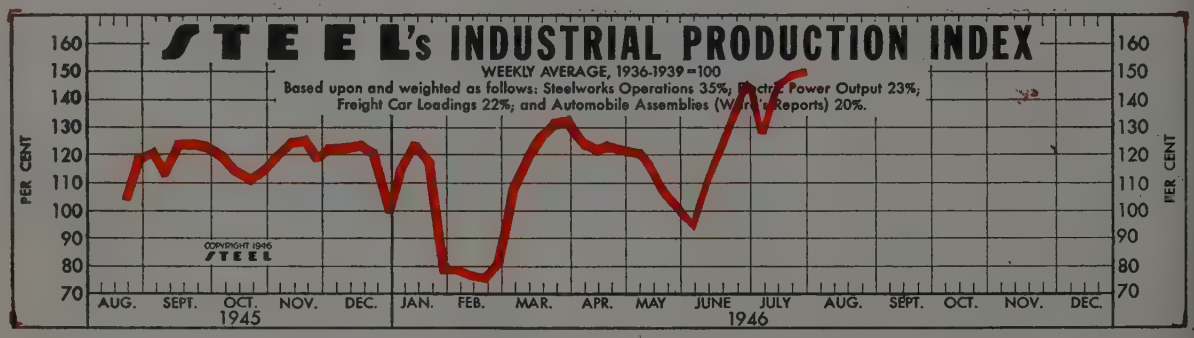
NEW POSTWAR RECORD—Evidence that the present high level of activity was taking shape in June is the Federal Reserve Board's industrial production index which for that month rose to a new postwar high of 170 per cent of the 1935-1939 average. Previous postwar high had been 168 per cent in November and March. The May index was 159. Most of the increase from May to June reflected sharp gains in output of coal and iron and steel after settlement of the coal strike. Production of durable goods increased about 10 per cent in June, while output of nondurable goods showed little change.

PRICES—At the end of the third week following the temporary suspension of government price controls the U. S. Bureau of Labor Statistics index of all wholesale prices stood at 124.2 per cent of the 1926 average, or 10 per cent above the level prevailing when price controls lapsed. In that three-week period, wholesale prices of farm products rose 13½ per cent, while those of all commodities other than farm products and foods rose only 2 per cent.

STRUCTURAL STEEL—June shipments of fabricated structural steel totaled 124,102 tons, highest monthly level for this year. May shipments totaled 123,975 tons. However, new orders booked dropped from 165,266 tons in May to 128,053 in June.

CASTINGS—Effect of the recent coal strike is reflected in shipments of gray iron castings in May, when 757,041 tons were moved compared with 856,678 in April. Meanwhile, unfilled orders for castings for sale to the trade rose to 2,491,811 tons at the end of May, higher than in any other month of either 1945 or 1946.

CONSTRUCTION—Although the dollar valuation of construction for which permits were issued in June was at a comparatively high level, the volume declined for the third successive month. The total fell 14 per cent in the month to $192,785,440, smallest since last November. Building permit values for 215 cities during the first half of 1946 totaled $1,487,230,111, more than three and one-half times the $404,753,864 for the corresponding period of 1945.



The Index (see chart above): Latest Week (preliminary) 149 Previous Week 148 Month Ago 142

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)‡	86.5	88	88	90.5
Electric Power Distributed (million kilowatt hours)	4,352	4,293	4,133	4,435
Bituminous Coal Production (daily av.—1000 tons)	2,076	2,116	2,153	1,903
Petroleum Production (daily av.—1000 bbls.)	4,926	4,937	4,957	4,930
Construction Volume (ENR—Unit $1,000,000)	$140.9	$121.6	$128.6	$41.1
Automobile and Truck Output (Ward's—number units)	86,980	80,985	66,913	16,105

*Dates on request. ‡1946 weekly capacity is 1,762,381 net tons. 1945 weekly capacity was 1,831,636 net tons.

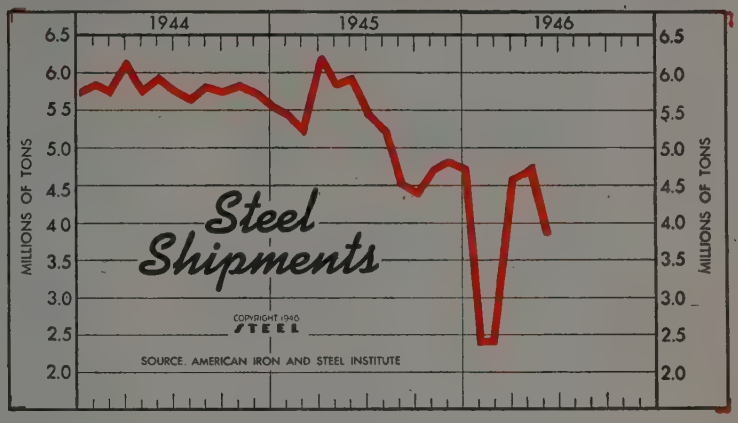
TRADE				
Freight Carloadings (unit—1000 cars)	900†	921	880	886
Business Failures (Dun & Bradstreet, number)	13	23	14	22
Money in Circulation (in millions of dollars)‡	$28,187	$28,241	$28,135	$26,926
Department Store Sales (change from like week a year ago)‡	+27%	+26%	+35%	+15%

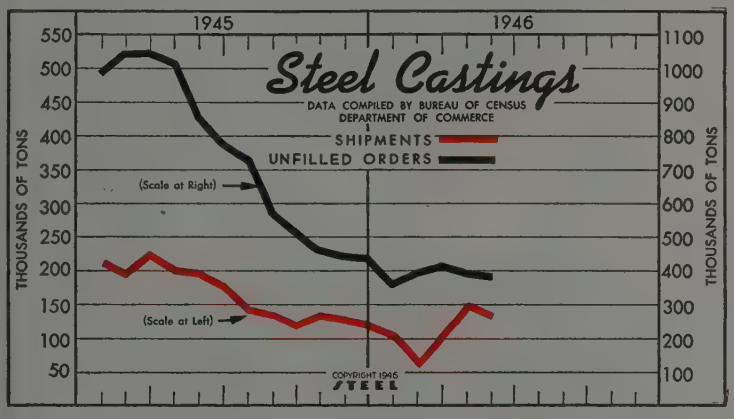
†Preliminary. ‡Federal Reserve Board.

Steel Shipments
(Net Tons)

	1946	1945	1944
Jan.	2,391,850*	5,435,647	5,767,687
Feb.	2,391,849*	5,184,498	5,700,673
Mar.	4,644,988	6,179,452	6,146,595
Apr.	4,698,081	5,769,786	5,744,177
May	3,906,064	5,938,055	5,859,786
June		5,437,206	5,703,314
July		5,214,074	5,597,631
Aug.		4,512,637	5,837,328
Sept.		4,391,143	5,743,437
Oct.		4,660,237	5,752,147
Nov.		4,779,628	5,686,527
Dec.		4,729,561	5,458,133

* Figures for January and February, 1946, are merely averages derived from a report that combined shipments for those two strike-affected months into a total of 4,783,699 tons.





Commercial Steel Castings
(Net tons in thousands)

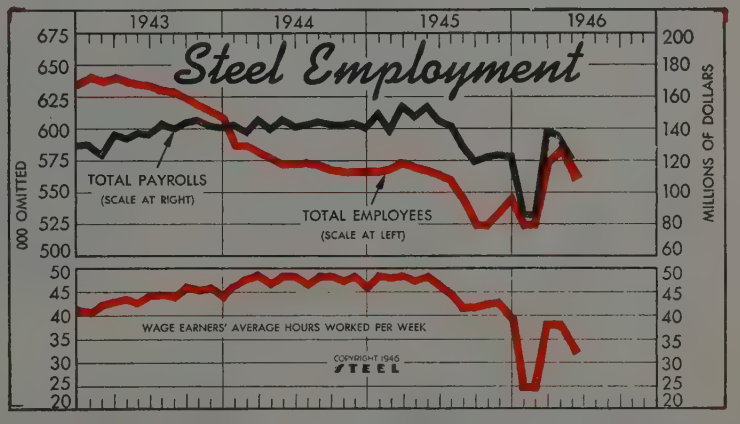
	Shipments 1946	Shipments 1945	Unfilled Orders* 1946	Unfilled Orders* 1945
Jan.	99.1	210.2	358.9	983.1
Feb.	57.4	191.4	390.1	1,045.4
Mar.	101.4	222.6	412.3	1,047.7
Apr.	146.3	197.7	392.8	1,018.9
May	129.2	192.9	381.7	852.9
June	....	173.7	....	776.3
July	....	139.3	....	728.4
Aug.	....	131.4	....	565.6
Sept.	....	114.6	....	513.8
Oct.	....	130.3	....	460.3
Nov.	....	123.0	....	443.8
Dec.	....	115.2	....	434.3

* Castings for sale.

Steel Employment

	—Employees†— (000 omitted) 1946	1945	1944†	—Total Payrolls— (Unit—$1,000,000) 1946	1945	1944
Jan.*	522	564	583	$84.9	$150.3	$141.8
Feb.*	522	566	583	84.9	138.4	137.6
Mar.	570	570	578	138.8	155.0	145.3
April	582	567	573	134.3	147.0	138.9
May	563	565	569	121.4	154.0	145.4
June	...	562	570	....	144.1	140.5
July	...	557	571	....	141.0	141.8
Aug.	...	543	569	....	128.1	143.9
Sept.	...	521	565	....	119.1	142.2
Oct.	...	522	564	....	121.3	141.7
Nov.	...	533	564	....	122.8	143.1
Dec.	...	545	564	....	122.5	139.9

† Monthly average. * Figures for January and February, 1946, are merely averages derived from a repo t that combined those two strike-affected months.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$12,294	$13,076	$12,435	$10,532
Federal Gross Debt (billions)	$268.3	$268.3	$269.2	$262.0
Bond Volume, NYSE (millions)	$19.4	$17.8	$8.2	$25.0
Stocks Sales, NYSE (thousands)	5,426	4,660	5,108	4,374
Loans and Investments (billions)†	$60.9	$60.6	$62.5	$64.0
United States Government Obligations Held (millions)†	$42,643	$42,185	$44,324	$47,267

†Member banks, Federal Reserve System.

PRICES

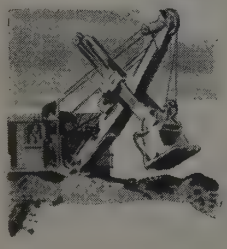
STEEL's composite finished steel price average	$64.45	$64.45	$64.45	$58.27
All Commodities†	124.2	120.7	112.4	105.6
Industrial Raw Materials†	141.4	137.2	126.0	117.7
Manufactured Products†	118.9	115.3	107.7	101.9

†Bureau of Labor Statistics Index, 1926 = 100.

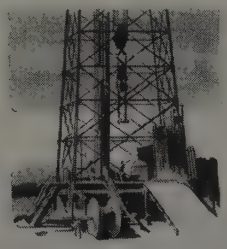
Your New Car is Coming...

How Wire Rope Contributes to it

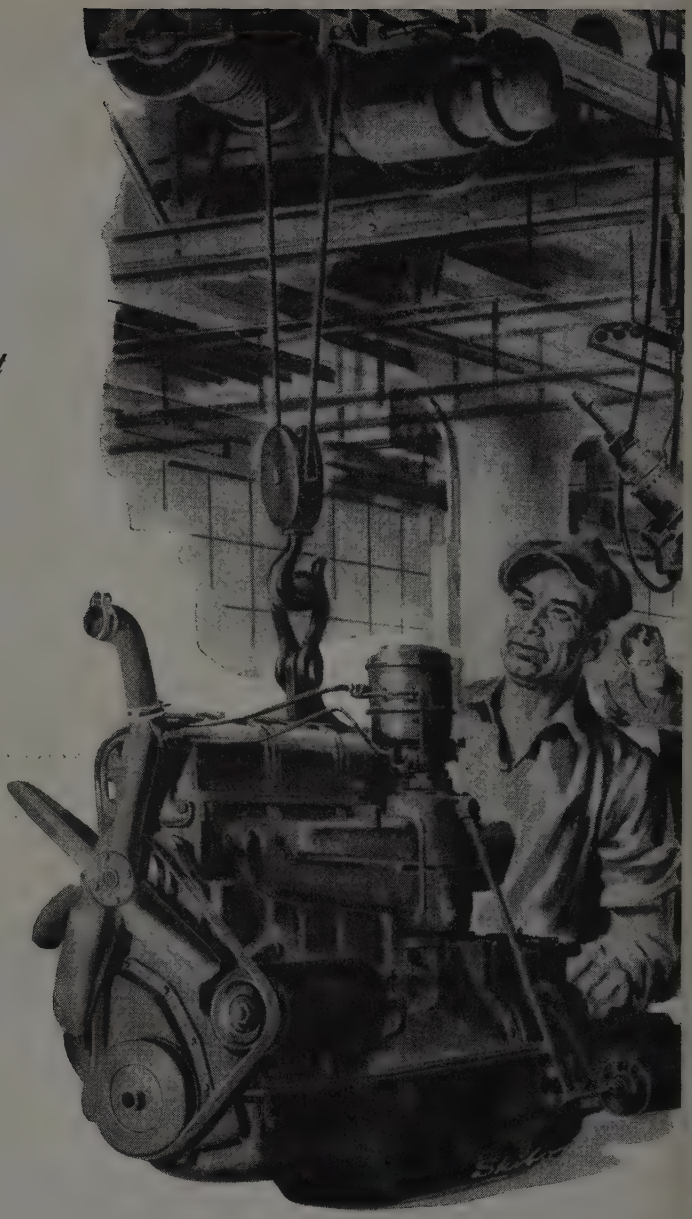
Automobile factories are working hard to get your new car to you as soon as possible. They use many cranes and hoists which depend on wire rope to transmit power to moving parts. Much of this wire rope is Preformed—because Preformed is more flexible and runs over small sheaves with minimum wear. This means it lasts longer. Preformed wire rope also resists kinking or twisting and so helps speed production.



Building of new roads over which you'll drive your new car is also speeded by using Preformed wire rope on shovels, bulldozers, scrapers, graders and concrete mixers. This modern wire rope spools evenly, reduces shutdowns for replacements.



Oil that will run and lubricate your new car comes from fields where equipment rigged with Preformed wire rope is at work. Drillers like Preformed because it resists whipping, spools better on the drum. It also makes faster round trips.



Preformed wire rope contributes to speeding production of your new car . . . building roads . . . drilling oil. Men in many industries which require a wire rope that must stand up under severe service specify Preformed. In fact, companies which change to Preformed find that its exclusive built-in features pay big dividends in time, money and efficiency. Preformed is the modern wire rope for modern machines.

Send for an interesting new free booklet, "PREFORMED WIRE ROPE—WHAT IT IS—WHAT IT DOES." Write the Preformed Wire Rope Information Bureau, 520 North Michigan Avenue, Chicago 11, Illinois, or

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR

Scrap Famine Threatens To Cut Steel Production Rate

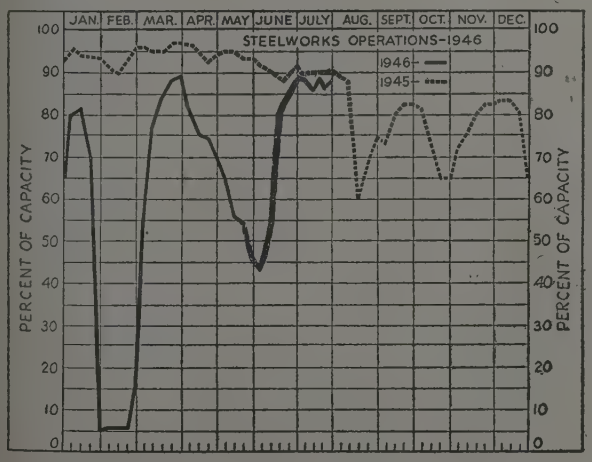
Open hearths being idled as supply shrinks . . . Pig iron advanced $2 but scrap denied higher ceiling . . . Car shortage causes alarm

SCARCITY of steel and iron scrap has reached an acute stage and is causing reduction in number of active open hearths, a threat to continued high rate of steel production. J. D. Small, administrator of Civilian Production Administration, has issued an appeal to industry to institute immediately a survey of all properties for sources of scrap and to arrange for immediate collection and movement into material supply lines. He warns open-hearth furnaces are being taken off from lack of scrap. A prominent midwestern steelmaker estimates 25 to 30 open hearths are idle from lack of scrap and with receipts down to 40 per cent of requirements exhaustion of reserves in four to six weeks is threatened.

Announcement last week by OPA that no increase in ceiling prices on scrap will be allowed now or in the foreseeable future, ceilings in effect June 30 to remain, is expected to cause release of some tonnage that had been held by producers and dealers in hope of higher prices. Extent of recent hoarding is uncertain.

Another factor interfering with steel production and distribution is an acute shortage of freight cars, attributed to grain movement in the West, but basically a result of the small number of cars built during the war years. A movement is on foot for the government and railroads to finance building of 50,000 box cars over the remainder of this year, with preference given to steel for this purpose.

Office of Price Administration has raised ceiling prices on pig iron $2 per ton, putting in effect the rise decided on before June 30 but interrupted by lapse of that agency. The order provides that the increase may be applied retroactively on adjustable contracts back to May 29.



DISTRICT STEEL RATES

(Percentage of Ingot Capacity Engaged in Leading Districts)

	Week Ended Aug. 3	Change	Same Week 1945	Same Week 1944
Pittsburgh	95	None	87.5	91
Chicago	89.5	+ 9.5	94.5	100.5
Eastern Pa.	84	— 3	87	94
Youngstown	88	None	90	95
Wheeling	93.5	None	91.5	92.5
Cleveland	90	— 2	75.5	93.5
Buffalo	88.5	None	83.5	90.5
Birmingham	99	None	95	95
New England	75	—12	86	80
Cincinnati	85	+ 1	94	82
St. Louis	54.5	None	68	87
Detroit	86	+ 3	83	86
Estimated national rate	88.5	+ 2	89.5	97

Based on weekly steelmaking capacity of 1,762,381 net tons for 1946; 1,831,636 tons for 1945; 1,791,287 tons for 1944.

Ample reason for lack of sufficient pig iron to supply needs of melters is found in the fact that during the first six months this year total output was only 17,806,821 net tons, a loss of 11,335,462 tons from the 29,142,283 tons produced in first half of 1945. However, there is hope of better things as June production was 3,682,273 tons, a gain of 1,407,728 tons over May, though far below the 4,605,012 tons turned out in June, 1945.

Some relief in pig iron production will be afforded by resumption of the blast furnace of Republic Steel Corp. at Troy, N. Y., within a short time. This follows settlement of a strike of iron ore miners in New York state, which has lasted about six months, necessitating closing of the furnaces when stocks were exhausted.

Office of Price Administration has granted a further advance in ceiling prices of bolts, nuts, screws and rivets, making the total advance 12 per cent over the level prior to April 1, and has decontrolled prices on large rivets and track bolts.

Estimated national steelmaking rate last week rose 2 points to 88½ per cent of capacity as Chicago mills recovered from the car shortage that had caused some curtailment the previous week. Chicago regained 9½ points to 89½ per cent, Cincinnati advanced 1 point to 85 and Detroit 3 points to 86. Cleveland lost 2 points to 90 per cent, eastern Pennsylvania 3 points to 84 and New England 12 points to 75. Other districts were unchanged, as follows: Pittsburgh 95, Youngstown 88, Wheeling 93½, Buffalo 88½, Birmingham 99, St. Louis 54½, West Coast 84.

Average composite prices of steel and iron products show only one change from recent weeks, due to an increase of $2 per ton for steelmaking pig iron, which lifted the pig iron price composite to $27.50. The retroactive provision allowing application of the increase on adjustable contracts back to May 29 has caused revision of the pig iron composite for June and July. Finished steel composite remains at $64.45, semifinished steel at $40.60 and steelmaking scrap at $19.17.

COMPOSITE MARKET AVERAGES

	Aug. 3	July 27	July 20	One Month Ago July, 1946	Three Months Ago May, 1946	One Year Ago Aug., 1945	Five Years Ago Aug., 1941
Finished Steel	$64.45	$64.45	$64.45	$64.45	$63.54	$58.27	$56.73
Semifinished Steel	40.60	40.60	40.60	40.60	40.60	37.80	36.00
Steelmaking Pig Iron	27.50	*27.50	*27.50	27.50	25.50	24.00	23.00
Steelmaking Scrap	19.17	19.17	19.17	19.17	19.17	19.17	19.17

Finished Steel Composite:—Average of industry-wide prices on sheets, strips, bars, plates, shapes, wire, nails, tin plate, standard and line pipe. **Semifinished Steel Composite:**—Average of industry-wide prices on billets, slabs, sheet bars, skelp and wire rods. **Steelmaking Pig Iron Composite:**—Average of basic pig iron prices at Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Neville Island, Granite City and Youngstown. **Steelworks Scrap Composite:**—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania. Finished steel, net tons; others, gross tons.

*Revised.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished material (except tin plate) and wire rods, cents per lb; boke, dollars per net ton; others, dollars per gross ton.

Finished Material

	Aug. 3, 1946	July, 1946	May, 1946	Aug., 1945
Steel bars, Pittsburgh	2.50c	2.50c	2.50c	2.25c
Steel bars, Philadelphia	2.86	2.86	2.82	2.57
Steel bars, Chicago	2.50	2.50	2.50	2.25
Shapes, Pittsburgh	2.35	2.35	2.35	2.10
Shapes, Philadelphia	2.48	2.48	2.465	2.215
Shapes, Chicago	2.35	2.35	2.35	2.10
Plates, Pittsburgh	2.50	2.50	2.50	2.25
Plates, Philadelphia	2.558	2.558	2.55	2.30
Plates, Chicago	2.50	2.50	2.50	2.25
Sheets, hot rolled, Pittsburgh	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Pittsburgh	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Pittsburgh	4.05	4.05	4.05	3.70
Sheets, hot-rolled, Gary	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Gary	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Gary	4.05	4.05	4.05	3.70
Hot-rolled strip, over 6 to 12-in., Pitts.	2.35	2.35	2.35	2.10
Cold-rolled strip, Pittsburgh	3.05	3.05	3.05	2.80
Bright basic, bess. wire, Pittsburgh	3.05	3.05	3.05	2.75
Wire nails, Pittsburgh	3.75	3.75	3.25	2.90
Tin plate, per base box, Pittsburgh	$5.25	$5.25	$5.25	$5.00

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$38.00	$38.00	$38.00	$36.00
Slabs, Pittsburgh, Chicago	39.00	39.00	39.00	36.00
Rerolling billets, Pittsburgh	39.00	39.00	39.00	36.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	2.30c	2.30c	2.30c	2.15c

Pig Iron

	Aug. 3, 1946	June, 1946	Apr., 1946	July, 1945
Bessemer del. Pittsburgh	$29.77	$29.69	$27.69	$26.19
Basic, Valley	28.00	28.00	26.00	24.50
Basic, eastern del. Philadelphia	29.93	29.93	27.84	26.34
No. 2 fdry., del. Pgh. N. & S. sides	29.27	29.19	27.19	25.69
No. 2 foundry, Chicago	28.50	28.50	26.50	25.00
Southern No. 2, Birmingham	24.88	24.88	22.88	21.38
Southern No. 2 del. Cincinnati	28.94	28.94	26.94	25.44
No. 2 fdry., del. Philadelphia	30.43	30.43	28.34	26.84
Malleable, Valley	28.50	28.50	26.50	25.00
Malleable, Chicago	28.50	28.50	26.50	25.00
Charcoal, low phos., fob Lyles, Tenn.	33.00	33.00	33.00	33.00
Gray forge, del. Pittsburgh	28.69	28.69	26.69	25.19
Ferromanganese, fob cars, Pittsburgh	140.00	140.00	140.00	140.33

Scrap

Heavy melting steel, No. 1, Pittsburgh	$20.00	$20.00	$20.00	$20.00
Heavy melt, steel, No. 2, E. Pa.	18.75	18.75	18.75	18.75
Heavy melting steel, Chicago	18.75	18.75	18.75	18.75
Rails for rolling, Chicago	22.25	22.25	22.25	22.25
No. 1 cast, Chicago	20.00	20.00	20.00	20.00

Coke

Connellsville, furnace ovens	$8.75	$8.75	$7.50	$7.50
Connellsville, foundry ovens	9.50	9.50	8.25	8.25
Chicago, by-product fdry., del.	15.10	15.10	13.75	13.67

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Finished steel quoted in cents per pound and semifinished in dollars per gross ton, except as otherwise noted. Delivered prices do not include the 3 per cent federal tax on freight. Pricing on rails was changed to net ton basis as of Feb. 15, 1946.

Semifinished Steel

Carbon Steel Ingots: Fob mill base, rerolling quality, standard analysis, $33.

Alloy Steel Ingots: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon; uncrop, $48.69.

Rerolling, Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $39; Detroit, del., $41; Duluth (billets), $41; Pac. ports (billets), $51. (Andrews Steel Co., carbon slabs, $41; Northwestern Steel & Wire Co., $41, Sterling, Ill.; Granite City Steel Co., $47.50 gross ton slabs from D.P.C. mill. Geneva Steel Co., $58.64, Pac. ports.)

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $47; Detroit, del., $49; Duluth, billets, $49; forging billets fob Pac. ports, $59.

(Andrews Steel Co. may quote carbon forging billets $50 gross ton at established basing points; Follansbee Steel Corp., $49.50 fob Toronto, O.; Geneva Steel Co., $64.64, Pacific ports.)

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $58.43; del. Detroit $60.43; eastern Mich. $61.43.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $38. (Empire Sheet & Tin Plate Co., Mansfield, O., carbon sheet bars, $39, fob mill.)

Skelp: Pittsburgh, Chicago, Sparrows Point, Youngstown, Coatesville, lb, 2.05c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, No. 5—$\frac{9}{32}$ in. inclusive, per 100 lb, $2.30. Do., over $\frac{9}{32}$—$\frac{47}{64}$-in., incl., $2.45; Galveston, base, $2.40 and $2.55, respectively. Worcester add $0.10; Pacific ports $0.50.

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham base, 20 tons one size, 2.50c; Duluth, base, 2.60c; Detroit, del., 2.60c; eastern Mich., 2.65c; New York, del., 2.86c; Phila., del., 2.86c; Gulf ports, dock, 2.85c; Pac., ports, dock, 3.15c. (Sheffield Steel Corp. may quote 2.75c, fob St. Louis; Joslyn Mfg. & Supply Co., 2.55c, fob Chicago.)

Rail Steel Bars: Same prices as for hot-rolled carbon cars except base is 5 tons.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.921c; Detroit, del., 3.021c. (Texas Steel Co. may use Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

AISI Series	(*Basic O-H)	AISI Series	(*Basic O-H)
1300	$0.108	4300	$1.839
2300	1.839	4600	1.298
2500	2.759	4800	2.326
3000	0 541	5100	0.379
3100	0.920	5130 or 5152	0.494
3200	1.461	6120 or 6152	1.028
		6145 or 6150	1.298
3400	3.462	8612	0.703
4000	0.487	8720	0.757
4100 (.15-.25 Mo)	0.757	9830	1.407
(.20-.30 Mo)	0.812		

* Add 0.25 for acid open-hearth; 0.50 electric.

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 20,000-39,999 lb, 3.10c; Detroit, 3.15c; Toledo, 3.25c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 3.625c; Detroit, del., 3.725c, eastern Mich., 3.755c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, 2.50c; Gulf ports, dock, 2.70c; Pacific ports, dock, 2.75c.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, del., 2.50c; Gulf ports, dock, 2.70c.

Iron Bars: Single refined, Pitts., 4.76c; double refined, 5.84c; Pittsburgh, staybolt, 6.22c; Terre Haute, single ref., 5.42c; double ref., 6.76c.

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Pt., Middletown, base, 2.425c; Granite City, base, 2.525c; Detroit, del., 2.525c; eastern Mich., del., 2.575c; Phila., del., 2.615c; New York, del., 2.685c; Pacific ports, 2.975c. (Andrews Steel Co. may quote hot-rolled sheets for shipment to the Detroit area on the Middletown, O., base; Alan Wood Steel Co., Conshohocken, Pa., may quote 2.60c on hot carbon sheets, nearest eastern basing point.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.275c; Granite City, base, 3.375c; Detroit, del., 3.375c; eastern Mich., del., 3.425c; New York, del., 3.615c; Phila., del., 3.635c; Pacific ports, 3.925c.

Galvanized Sheets, No. 24: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base, 4.05c; Granite City, base, 4.15c; New York, del., 4.31c; Phila., del., 4.24c; Pacific ports, 4.60c.

Corrugated Galv. Sheets: Pittsburgh, Chicago, Gary, Birmingham, 29-gage, per square, 3.73c.

Culvert Sheets: Pittsburgh, Chicago, Gary, Birmingham, 16-gage not corrugated, copper alloy, 4.15c; Granite City, 4.25c; Pacific ports, 4.60c; copper iron, 4.50c; pure iron, 4.50c; zinc-coated, hot-dipped, heat-treated, No. 24, Pittsburgh, 4.60c.

Aluminized Sheets, 20 gage: Pittsburgh, hot-dipped, coils or cut to lengths, 9.00c.

Enameling Sheets: 10-gage; Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base 3.20c; Granite City, base 3.30c; Detroit, del., 3.30c; eastern Mich., 3.35c; Pacific ports, 3.85c; 20-gage: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base, 3.80c; Detroit, del., 3.90c; eastern Mich., 3.95c; Pacific ports, 4.45c.

Electrical Sheets No. 24:

	Pittsburgh Base	Pacific Ports	Granite City
Field grade	3.90c	4.65c	4.00c
Armature	4.25c	5.00c	4.35c
Electrical	4.75c	5.50c	4.85c
Motor	5.425c	6.175c	5.525c
Dynamo	6.125c	6.875c	6.225c
Transformer			
72	6.625c	7.375c	.....
65	7.625c	8.375c	.....
58	8.125c	8.875c	.....
52	8.925c	9.675c	.....

Hot-Rolled Strip: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Middletown, 6-in. and narrower: Base, 2.45c; Detroit, del., 2.55c; eastern Mich., del., 2.60c; Pacific ports, 3.10c. (Superior Steel Corp. may quote 3.30c, Pitts.)

Over 6-in.: Base, 2.35c; Detroit, del., 2.45c; eastern Mich., del., 2.50c; Pacific ports, 3.00c. (Superior Steel Corp. may quote 3.20c, Pitts.)

Cold-Rolled Strip: Pittsburgh, Cleveland, Youngstown, 0.25 carbon and less, 3.05c; Chicago, base, 3.15c; Detroit, del., 3.15c; eastern Mich., del., 3.20c; Worcester, base, 3.25c. (Superior Steel Corp. may quote 4.70c, Pitts.)

Cold-Finished Spring Steel: Pittsburgh, Cleveland base, 0.26-0.50 carbon, 3.03c. Add 0.20c for Worcester.

Tin, Terne Plate

(OPA ceiling prices announced March 1, 1946.)

Tin Plate: Pittsburgh, Chicago, Gary, 100-lb base box, $5.25; Granite City, Birmingham, Sparrows Point, $5.35.

Electrolytic Tin Plate: Pittsburgh, Gary, 100-lb base box, 0.25 lb tin, $4.60; 0.50 lb tin, $4.75; 0.75 lb tin, $4.90; Granite City, Birmingham, Sparrows Point, $4.70, $4.85, $5.00, respectively.

Tin Mill Black Plate: Pittsburgh, Chicago, Gary, base 29-gage and lighter, 3.30c; Granite City, Birmingham, Sparrows Point, 3.40c; Pacific ports, boxed, 4.30c.

Long Ternes: Pittsburgh, Chicago, Gary, No. 24 unassorted, 4.05c; Pacific ports, 4.80c.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, 100-base box, $4.55; Granite City, Birmingham, Sparrows Point; $4.65.

Roofing Ternes: Pittsburgh base per package 112 sheets; 20 x 28 in., coating I. C. 8-lb $12.50; 15-lb $14.50; 20-lb $15.50 (nom.); 40-lb $20.00 (nom.)

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, Coatesville, Claymont, 2.50c; New York, del., 2.71c; Phila., del., 2.558c; St. Louis, 2.74c; Boston, del., 2.86c; Pacific ports, 3.05c; Gulf ports, 2.85c.

(Granite City Steel Co. may quote carbon plates 2.65c fob D.P.C. mill; Geneva Steel Co., Provo, Utah, 3.20c fob Pac. ports; Central Iron & Steel Co., Harrisburg, Pa., 2.80c, basing points; Lukens Steel Co., Coatesville, Pa., 2.75c, base; Worth Steel Co., Claymont, Del., 2.60c, base; Alan Wood Steel Co., Conshohocken, Pa., 2.75c base.)

Floor Plates: Pittsburgh, Chicago, 3.75c; Pacific ports, 4.40c; Gulf ports, 4.10c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, Coatesville, 3.787c; Gulf ports, 4.273c; Pacific ports, 4.49c.

Clad Steel Plates: Coatesville, 10% cladding: nickel-clad, 18.72c; inconel-clad, 26.00c; monel-clad, 24.96c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.35c; New York, del., 2.54c; Phila., del., 2.48c; Pacific ports, 3.00c; Gulf ports, 2.70c.

(Phoenix Iron Co., Phoenixville, Pa., may quote the equivalent of 2.60c, Bethlehem, Pa., on the general range and 2.70c on beams and channels from 4 to 10 inches.)

Steel Piling: Pittsburgh, Chicago, Buffalo, 2.65c; Pacific ports, 3.20c.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham, per 100 pounds)

Wire to Manufacturers in carloads

Bright basic or bessemer	*$3.05
Spring (except Birmingham)	*$4.00

Wire Products to Trade

Nails and staples

Standard and cement-coated	†$3.75
Galvanized	††$3.40

Wire, Merchant Quality

Annealed	§$3.50
Galvanized	§$3.85

(Fob Pittsburgh, Chicago, Cleveland, Birmingham, per base column)

Adjustments Pend

Delivered prices quoted on these pages are subject to upward revision in line with the Interstate Commerce Commission's order authorizing an increase in railroad freight rates, effective as of July 1. The order authorized a general 6 per cent increase with certain exceptions.

Woven fence, 15½ gage and heavier	72
Barbed wire, 80-rod spool	79
Barbless wire, twisted	79
Fence posts	74
Bale ties, single loop	72½

*Add $0.10 for Worcester, $0.05 for Duluth and $0.50 for Pacific ports.

†Add $0.30 for Worcester, $0.50 for Pacific ports. Nichols Wire & Steel may quote $4.25.

††Add $0.50 for Pacific ports.

§Add $0.10 for Worcester, $0.70 for Pacific ports.

Tubular Goods

Welded Pipe: Base price in carloads, threaded and coupled to consumers about $200 per net ton. Base discounts on steel pipe Pittsburgh and Lorain, O.; Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Pittsburgh base only on wrought iron pipe.

Butt Weld

In.	Steel Blk.	Steel Galv.	In.	Iron Blk.	Iron Galv.
⅛	53	30	½	21	0½
¼ & ⅜	56	37½	¾	27	7
½	60½	48	1-1¼	31	13
¾	63½	52	1½	35	15½
1-3	65½	54½	2	34½	15

Boiler Tubes: Net base prices per 100 feet fob Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D. sizes	B.W.G.	—Seamless— Hot Rolled	Cold Drawn	—Elec. Weld— Hot Rolled	Cold Rolled
1"	13	.....	$9.90	$9.36	$9.65
1¼"	13	.....	11.73	9.63	11.43
1½"	13	$10.91	12.96	10.63	12.64
1¾"	13	12.41	14.75	12.10	14.37
2"	13	13.90	16.52	13.53	16.19
2¼"	13	15.50	18.42	15.06	18.03
2½"	12	17.07	20.28	16.57	19.83
2¾"	12	18.70	22.21	18.11	21.68
2⅞"	12	19.82	23.54	19.17	22.95
3"	12	20.79	24.71	20.05	24.02
3½"	11	26.24	31.18	25.30	30.29
4"	10	32.56	38.68	31.32	37.52
4½"	9	43.16	51.29	.....	.....
5"	9	49.96	59.36	.....	.....
6"	7	76.71	91.14	.....	.....

Pipe, Cast Iron: Class B, 6-in. and over, $60 per net ton, Birmingham; $65, Burlington, N. J.; $62.80, del., Chicago; 4-in. pipe, $5 higher. Class A pipe, $3 a ton over class B.

Rails, Supplies

Standard rails, over 60-lb, fob mill, net ton, $43.40. Light rails (billet), Pittsburgh, Chicago, Birmingham, net ton, $49.18.

Relaying rails, 35 lb and over, fob railroad and basing points, $31-$33.

Supplies: Track bolts, *4.75c; heat treated, 5.00c. Tie plates $51 net ton, base. Standard spikes 3.65c.

*Plus 12 per cent increase, effective July 26.

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; Reg. carbon 15.15c; extra carbon 19.48c; special carbon 23.80c; oil-hardening 25.97c; high carbon-chromium 46.53c.

W.	Cr.	V.	Mo.	Base, per lb.
18.00	4	1	...	72.49c
1.5	4	1	8.5	58.43c
.....	4	2	8	58.43c
6.40	4.15	1.90	5	62.22c
5.50	4.50	4	4.50	75.74c

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago. Additional discounts: 5 for carloads; 10 for full containers, except tire, step and plow bolts.

(Ceiling prices advanced 12 per cent effective July 27, 1946; discounts remain unchanged.)

Carriage and Machine

½ x 6 and smaller	65½ off
Do., ⅞ and ⅝ x 6-in. and shorter	63½ off
Do., ¾ to 1 x 6-in. and shorter	61 off
1⅛ and larger, all lengths	59 off
All diameters, over 6-in. long	59 off
Tire bolts	50 off
Step bolts	56 off
Plow bolts	65 off

Stove Bolts

In packages, nuts separate, 71-10 off, nuts attached, 71 off; bulk, 80 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hex	U.S.S.	S.A.E.
⅞-in. and smaller	..	64
½-in. and smaller	62	..
½-in.-1-in.	..	60
⅝-in.-1-in.	59	..
1⅛-in.-1½-in.	57	58
1⅝-in. and larger	56	..

Additional discount of 10 for full kegs.

Hexagon Cap Screws

Upset 1-in., smaller	64 off
Milled 1-in., smaller	60 off

Square Head Set Screws

Upset 1-in. and smaller	71 off
Headless, ¼-in. and larger	60 off
No. 10 and smaller	70 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural	*3.75c
⅞-inch and under	*65-5 off

*Plus 12 per cent increase effective July 26.

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $2.75-$3.00 off

Stainless Steels

Base, Cents per lb

CHROMIUM NICKEL STEELS

	Bars	Plates	Sheets	H. R. Strip	C. R. Strip
302	25.96c	29.21c	36.79c	23.93c	30.30c
303	28.13	31.38	38.95	29.21	35.71
304	27.05	31.38	38.95	25.45	32.46
308	31.38	36.79	44.36	30.84	37.87
309	38.95	43.28	50.85	40.03	50.85
310	53.02	56.26	57.35	52.74	60.59
312	38.95	43.28	53.02	.....	.....
*316	43.28	47.61	51.94	43.28	51.94
§321	31.38	36.79	44.36	31.65	41.12
†347	35.71	41.12	48.69	35.71	45.44
431	20.56	23.80	31.38	18.94	24.35

STRAIGHT CHROMIUM STEEL

403	23.93	26.51	31.92	22.99	29.21
**410	20.02	23.93	28.67	18.39	23.80
416	20.56	23.80	29.21	19.75	25.45
††420	25.96	30.84	36.25	25.70	39.49
430	20.56	23.80	31.38	18.94	24.35
‡‡430F	21.10	24.35	31.92	20.29	26.51
440A	25.96	30.84	36.25	25.70	39.49
442	24.35	27.59	35.17	25.96	34.62
443	24.35	27.59	35.17	25.96	34.62
446	29.76	33.00	39.49	37.87	56.26
501	8.66	12.98	17.04	12.98	18.39
502	9.74	14.07	18.12	14.07	19.48

STAINLESS CLAD STEEL (20%)

(Fob Pittsburgh and Washington, Pa., plate prices include annealing and pickling.)

304	...	19.48	20.56	....	....
410	....	17.31	18.39	....	....
430	....	17.85	18.94	....	....
446	....	19.48	20.56	....	....

* With 2-3% molybdenum. § With titanium. † With columbium. ** Plus machining agent. †† High carbon. ‡‡ Free machining.

Metallurgical Coke

Price Per Net Ton

Beehive Ovens

Connellsville, furnace	$7.50
Connellsville, foundry	8.50- 8.75
New River, foundry	9.00- 9.25
Wise county, foundry	7.75- 8.25
Wise county, furnace	7.25- 7.75

By-Product Foundry

Kearney, N. J. ovens	14.40
Chicago, outside delivered	14.35
Chicago, delivered	15.10
Terre Haute, delivered	14.85
Milwaukee, ovens	15.10
New England, delivered	16.00
St. Louis, delivered	†15.10
Birmingham, delivered	12.25
Indianapolis, delivered	14.85
Cincinnati, delivered	14.60
Cleveland, delivered	14.55
Buffalo, delivered	14.75
Detroit, delivered	15.10
Philadelphia, delivered	14.63

†15.68 from other than Ala., Mo., Tenn.

WAREHOUSE STEEL PRICES

Base delivered price, cents per pound, for delivery within switching limits, subject to established extras. Quotations based on mill prices announced March 1, 1945.

	Hot-rolled bars	Structural shapes	Plates	Floor plates	Hot-rolled sheets (10-gage base)	Hot-rolled strip (14-gage and lighter, 6-in and narrower)	Hot-rolled strip (12-gage and heavier wider than 6-inch)	Galvanized flat sheets (24-gage base)	Cold-rolled sheets (17-gage base)	Cold finished bars	Cold-rolled strip
Boston	4.356[1]	4.203[1]	4.203[1]	6.039[1]	4.050[1]	5.548[1]	4.418[1]	5.725[14]	5.031[14]	4.656[21]	4.965
New York	4.134[1]	4.038[1]	4.049[1]	5.875[1]	3.856[1]	4.375[1]	4.275[1]	5.501[12]	4.838[14]	4.584[21]	5.075
Jersey City	4.155[1]	4.018[1]	4.049[1]	5.875[1]	3.856[1]	4.375[1]	4.275[1]	5.501[12]	4.890[14]	4.605[21]	5.075
Philadelphia	4.114[1]	3.937[1]	3.875[1]	5.564[1]	3.774[1]	4.664[1]	4.554[1]	5.499[25]	5.139[25]	4.564[21]	5.064
Baltimore	4.093[1]	4.05[1]	3.865[1]	5.543[1]	3.64[1]	4.293[1]	4.193[1]	5.365[17]	5.118[20]	4.543[21]	.....
Washington	4.232[1]	4.22[1]	4.067[1]	5.632[1]	3.842[1]	4.432[1]	4.332[1]	5.667[17]	5.007[24]	4.532[21]	.....
Norfolk, Va.	4.377[1]	4.303[1]	4.262[1]	5.777[1]	4.037[1]	4.927[1]	4.477[1]	5.862[17]	4.552[24]	4.677[21]	.....
Bethlehem, Pa.*	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Claymont, Del.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Coatesville, Pa.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo (city)	3.60[1]	3.65[1]	3.92[1]	5.55[1]	3.575[1]	4.21[1]	4.11[1]	5.20[15]	4.625[10]	4.20[21]	4.96
Buffalo (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[15]	4.525[10]	4.10[21]	4.60
Pittsburgh (city)	3.60[1]	3.65[1]	3.65[1]	5.25[1]	3.575[1]	3.95[1]	3.850[1]	5.327[21]	4.625[24]	4.20[21]	4.70
Pittsburgh (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[12]	4.525[24]	4.10[21]	4.60
Cleveland (city)	3.60[1]	3.88[1]	3.65[1]	5.48[1]	3.575[1]	3.95[1]	3.850[1]	5.347[13]	4.625[24]	4.20[21]	4.70
Cleveland (country)	3.50[1]	.....	3.55[1]	.....	3.475[1]	3.85[1]	3.750[1]	.....	4.525[24]	4.10[21]	4.60
Detroit	3.70[1]	3.952[1]	3.90[1]	5.572[1]	3.675[1]	4.050[1]	3.950[1]	5.491[13]	4.725[24]	4.25[12]	4.95
Omaha (city, del.)	4.32[1]	4.37[1]	4.37[1]	5.97[1]	4.045[1]	4.52[1]	4.42[1]	6.00[15]	5.72[24]	4.945[21]	.....
Omaha (country)	4.22[1]	4.27[1]	4.27[1]	5.87[1]	3.945[1]	4.42[1]	4.32[1]	5.90[15]	.....	.....	.....
Cincinnati	3.902[1]	3.983[1]	3.952[1]	5.583[1]	3.671[1]	4.046[1]	3.946[1]	5.296[15]	4.271[24]	4.602[21]	.....
Youngstown*	.....	.....	.....	.....	.....	.....	.....	4.85[13]	.....	.....	.....
Middletown, O.*	.....	.....	.....	.....	3.475[1]	3.85[1]	3.750[1]	5.10[10]	.....	.....	.....
Chicago (city)	3.75[1]	3.80[1]	3.80[1]	5.40[1]	3.475[1]	3.95[1]	3.850[1]	‡5.40[13]	4.425[24]	4.20[21]	4.90
Milwaukee	3.908[1]	3.958[1]	3.958[1]	5.558[1]	3.633[1]	4.108[1]	4.008[1]	‡5.558[15]	4.583[24]	4.358[21]	5.058
Indianapolis	3.83[1]	3.88[1]	3.88[1]	5.48[1]	3.748[1]	4.118[1]	4.018[1]	5.368[15]	4.793[24]	4.43[21]	5.038
St. Paul	4.092[2]	4.142[2]	4.142[2]	5.742[2]	3.817[2]	4.292[2]	4.192[2]	5.666[15]	4.767[24]	4.852[21]	5.393
St. Louis	3.918[1]	3.968[1]	3.968[1]	5.568[1]	3.643[1]	4.118[1]	4.018[1]	5.622[15]	4.593[24]	4.522[21]	5.228
Memphis, Tenn.	4.296[1]	4.346[1]	4.346[1]	6.071[1]	4.221[1]	4.596[1]	4.496[1]	5.746[15]	.....	4.821[21]	.....
Birmingham	3.75[1]	3.80[1]	3.80[1]	6.158[1]	3.675[1]	4.05[1]	4.05[1]	5.20[15]	5.077[24]	4.99[21]	5.465
New Orleans (city)	4.358[1]	4.408[1]	4.408[1]	6.329[1]	4.283[1]	4.658[1]	.....	5.808[15]	5.304[24]	5.079[21]	.....
Houston, Tex.	4.00[3]	4.50[1]	4.50[1]	5.75[9]	3.958[9]	4.668[3]	4.568[6]	5.763[26]	5.819[15]	4.10[22]	.....
Los Angeles	4.65[4]	4.90[4]	5.20[4]	7.45[4]	5.225[4]	5.30[4]	5.200[4]	6.55[13]	7.425[6]	6.033[21]	5.863
San Francisco	4.20[7]	4.15[7]	4.15[7]	5.85[7]	4.125[7]	5.85[7]	4.50[7]	6.35[15]	6.875[15]	5.783[21]	7.583
Portland, Oreg.	4.70[27]	4.70[27]	5.00[27]	6.75[27]	4.875[27]	6.65[27]	5.000[27]	6.20[15]	6.825[15]	5.983[15]	.....
Tacoma, Wash.	4.60[6]	4.70[6]	5.00[6]	6.75[6]	4.87[6]	5.80[6]	4.60[6]	6.40[15]	6.55[15]	6.23[21]	.....
Seattle	4.60[6]	4.70[6]	5.00[6]	6.75[6]	4.87[6]	5.80[6]	4.60[6]	6.40[15]	6.55[15]	6.23[21]	.....

* Basing point cities with quotations representing mill prices, plus warehouse spread; ‡ open market price.

BASE QUANTITIES

[1]—400 to 1999 pounds; [2]—400 to 14,999 pounds; [3]—any quantity; [4]—300 to 1999 pounds; [5]—400 to 8999 pounds; [6]—300 to 9999 pounds; [7]—400 to 39,999 pounds; [8]—under 2000 pounds; [9]—under 4000 pounds; [10]—500 to 1499 pounds; [11]—one bundle to 39,999 pounds; [12]—150 to 2249 pounds; [13]—150 to 1499 pounds; [14]—three to 24 bundles.. [15]—450 to 1499 pounds; [16]—one bundle to 1499 pounds; [17]—one to nine bundles; [18]—one to six bundles; [19]—100 to 749 pounds; [20]—300 to 1999 pounds; [21]—1500 to 39,999 pounds; [22]—1500 to 1999 pounds; [23]—1000 to 39,999 pounds; [24]—400 to 1499 pounds; [25]—1000 to 1999 pounds; [26]—under 25 bundles. Cold-rolled strip, 2000 to 39,999 pounds, base; [27]—300 to 4999 pounds.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.45
Mesabi nonbessemer	5.05
High phosphorus	5.05
Mesabi bessemer	5.20
Old range nonbessemer	5.30

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56-63% contract	15.00

Foreign Ore

Cents per unit, cif Atlantic ports

Manganiferous ore, 45-55% Fe., 6-10% Mn.	Nom.
N. African low phos.	Nom.
Swedish basic, 60 to 68%	Nom.
Spanish, N. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro	7.50-8.00

Tungsten Ore

Chinese Wolframite, per short ton unit, duty paid	$24.00

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Oreg., or Tacoma, Wash.

(S 8 paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African

48% 2.8:1	$39.75
48% 3:1	41.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio	$27.40
45% no ratio	28.30
48% no ratio	31.00
50% no ratio	32.80

Brazilian—nominal

44% 2.5:1 lump	$33.65
48% 3:1 lump	43.50

Rhodesian

45% no ratio	$28.30
48% no ratio	31.00
48% 3:1 lump	41.00

Domestic (seller's nearest rail)

48% 3:1	$43.50

less $7 freight allowance.

Manganese Ore

Sales prices of Office of Metals Reserve, cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85c; Fontana, Calif., Provo, Utah, and Pueblo, Colo., 91c; prices include duty on imported ore and are subject to established premiums, penalties and other provisions. Price at basing points which are also points of discharge of imported manganese ore is fob cars, shipside, at dock most favorable to the buyer. Outside shipments direct to consumers at 15c to 17c per unit less than Metal Reserve prices.

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0.75

NATIONAL EMERGENCY STEELS (Hot Rolled)

(Extras for alloy content)

Basic open-hearth Electric furnace

Designation	Chemical Composition Limits, Per Cent C	Mn	Si	Cr	Ni	Mo	Bars per 100 lb.	Billets per GT	Bars per 100 lb.	Billets per GT
NE 9415	.13-.18	.80-1.10	.20-.35	.30-.50	.30-.60	.08-.15	$0.812	$16.230	$1.353	$27.050
NE 9425	.23-.28	.80-1.20	.20-.35	.30-.50	.30-.60	.08-.15	.812	16.230	1.353	27.050
NE 9442	.40-.45	1.00-1.30	.20-.35	.30-.50	.30-.60	.08-.15	.866	17.312	1.407	28.132
NE 9722	.20-.25	.50-.80	.20-.35	.10-.25	.40-.70	.15-.25	.703	14.066	1.244	24.886
NE 9912	.10-.15	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.542
NE 9920	.18-.23	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.542

Extras are in addition to a base price of 2.921c. per pound on finished products and $58.43 per gross ton on semifinished steel major basing points and are in cents per pound and dollars per gross ton. No prices quoted on vanadium alloy.

Pig Iron

Maximum prices per gross ton fixed by OPA schedule No. 10, last amended July 27, 1946; $2 increase may be charged on adjustable pricing contracts made between May 29 and July 27. Delivered prices do not include 3 per cent federal tax, effective Dec. 1, 1942.

	No. 2 Foundry	Basic	Bessemer	Malleable
Bethlehem, Pa., base	$29.50	$29.00	$30.50	$30.00
Newark, N. J., del.	31.20	30.70	32.20	31.70
Brooklyn, N. Y., del.	32.28	.....	.....	32.78
Birdsboro, Pa., base	29.50	29.00	30.50	30.00
Birmingham, base	24.88	23.50	29.50	.....
Baltimore, del.	30.22	.....	.....	.....
Boston, del	29.68	.....	.....	.....
Chicago, del.	28.72	.....	.....	.....
Cincinnati, del.	28.94	28.06	.....	.....
Cleveland, del.	28.62	27.74	.....	.....
Newark, N. J.	30.82	.....	.....	.....
Philadelphia, del.	30.05	29.55	.....	.....
St. Louis, del.	28.62	29.54	.....	.....
Buffalo, base	28.50	27.50	29.50	29.00
Boston, del.	30.06	29.56	31.06	30.56
Rochester, del.	30.03	.....	31.03	30.53
Syracuse, del.	30.58	.....	31.58	31.08
Chicago, base	28.50	28.00	29.00	28.50
Milwaukee, del.	29.73	29.23	30.23	29.73
Muskegon, Mich., del.	32.05	.....	.....	32.05
Cleveland, base	28.50	28.00	29.00	28.50
Akron, Canton, del.	30.04	29.54	30.54	30.04
Detroit, base	28.50	28.00	29.00	28.50
Saginaw, Mich., del.	30.81	30.31	31.31	30.81
Duluth, base	29.00	28.50	29.50	29.00
St. Paul, del.	31.13	30.63	31.63	31.13
Erie, Pa., base	28.50	28.00	29.50	29.00
Everett, Mass., base	29.50	29.00	30.50	30.00
Boston, del.	30.06	29.56	31.06	30.56
Granite City, Ill., base	28.50	28.00	29.00	28.50
St. Louis, del.	29.00	28.50	.....	29.00
Hamilton, O., base	28.50	28.00	.....	28.50
Cincinnati, del.	29.68	29.18	.....	29.68
Neville Island, Pa., base	28.50	28.00	29.00	28.50
*Pittsburgh, del., N.&S. sides	29.27	28.77	29.77	29.27
Provo, Utah, base	26.50	26.00	.....	.....
Sharpsville, Pa., base	28.50	28.00	29.00	28.50
Sparrows Point, base	29.50	29.00	.....	.....
Baltimore, del.	30.60	.....	.....	.....
Steelton, Pa., base	.....	29.00	.....	.....
Swedeland, Pa., base	29.50	29.00	30.50	30.00
Philadelphia, del.	30.43	29.93	.....	30.93
Toledo, O., base	28.50	28.00	29.00	28.50
Youngstown, O., base	28.50	28.00	29.00	28.50
Mansfield, O., del.	30.66	30.16	31.16	30.66

* To Neville Island base add: 61c for McKees Rocks, Pa.; 93c Lawrenceville, Homestead, McKeesport, Ambridge, Monaco, Aliquippa; 97c (water), Monongahela; $1.24, Oakmont, Verona; $1.38, Brackenridge.

Exceptions to above prices: Struthers Iron & Steel Co., Struthers, O., may charge 50 cents a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable pig iron. Republic Steel Corp. may quote $2 a ton higher for foundry and basic pig iron on the Birmingham base.

High Silicon, Silvery

6.00-6.50 per cent (base) $34.00
6.51-7.00..$35.00 9.01- 9.50. 40.00
7.01-7.50.. 36.00 9.51-10.00. 41.00
7.51-8.00.. 37.00 10.01-10.50. 42.00
8.01-8.50.. 38.00 10.51-11.00. 43.00
8.51-9.00.. 39.00 11.01-11.50. 44.00

Fob Jackson county, O., per gross ton; Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Electric Furnace Ferrosilicon: Si 14.01 to 14.50%, $50 Jackson co.; each additional 0.50% silicon up to and including 18% add $1; low impurities not exceeding 0.005 P, 0.40 Si, 1.0% C, add $1.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton.

Charcoal Pig Iron

Semi-cold blast, low phosphorus.

Fob furnace, Lyles, Tenn., $33.00. (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $28.00
Valley base 28.00

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Buffalo, N. Y., $34.00 base; $35.38, del., Philadelphia. Intermediate phosphorus, Central Furnace, Cleveland, $31.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge not to exceed 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge not to exceed 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Refractories

Per 1000, fob shipping point. Net prices

Fire Clay Brick

Super Duty

Pa., Mo., Ky. $76.05

High Heat Duty

Pa., Ill., Md., Mo., Ky. 60.40
Ala., Ga. 60.40
N. J. 65.90

Intermediate Heat Duty

Ohio 52.95
Pa., Ill., Md., Mo., Ky. 54.80
Ala., Ga. 49.15
N. J. 57.65

Low Heat Duty

Pa., Md., Ohio 48.00

Malleable Bung Brick

All bases 70.45

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry Press 36.45
Wire Cut 34.15

Silica Brick

Pennsylvania 60.40
Joliet, E. Chicago 69.30
Birmingham, Ala. 60.40

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.
Bulk 22.00
Bags 26.00

Basic Brick

Net ton, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick 54.00
Chem. bonded chrome 54.00
Magnesite brick 76.00
Chem. bonded magnesite 65.00

Fluorspar

Metallurgical grade, fob shipping point in Ill., Ky., net ton, carloads, effective CaF_2 content, 70% or more, $33; 65% to 70%, $32; 60% to 65%, $31; less than 60%, $30.

Ferroalloy Prices

Ferromanganese, standard: 78-82% c.l. gross ton, duty paid, **$135** fob cars, Baltimore, Philadelphia or New York, whichever is most favorable to buyer, Rockdale or Rockwood, Tenn. (where Tennessee Products Co. is producer), Birmingham, Ala. (where Sloss-Sheffield Steel & Iron Co. is producer); $140 fob cars, Pittsburgh (where Carnegie-Illinois Steel Corp. is producer); add $6 for packed c.l., $10 for ton, $13.50 for less ton; $1.70 for each 1%, or fraction contained manganese over 82% or under 78%.

Ferromanganese, low carbon: Eastern zone: Special, 21c; regular, 20.50c; medium, 14.50c; central zone: Special, 21.30c; regular, 20.80c; medium, 14.80c; western zone: Special, 21.55c; regular, 21.05c; medium, 15.75c. Prices are per pound contained Mn, bulk carlot shipments, fob shipping point, freight allowed. Special low-carbon has content of 90% Mn, 0.10% C, and 0.06% P.

Spiegeleisen: 19-21% carlot per gross ton, Palmerton, Pa., $36; Pittsburgh, $40.50; Chicago, $40.60.

Electrolytic Manganese: 99.9% plus, fob Knoxville, Tenn., freight allowed east of Mississippi on 250 lb or more: Carlots 32c, ton lots 34c, drum lots 36c, less than drum lot 38c. Add 1½c for hydrogen-removed metal.

Chromium Metal: 97% min. chromium, max. 0.50% carbon, eastern zone, per lb contained chromium bulk, c.l., 79.50c, 2000 lb to c.l. 80c; central 81c and 82.50c; western 82.25c and 84.75c; fob shipping point, freight allowed.

Ferrocolumbium: 50-60% per lb contained columbium in gross ton lots, contract basis, R. R. freight allowed, eastern zone, $2.25; less-ton lots $2.30. Spot prices up 10 cents.

Ferrochrome: Contract, lump, packed; **high carbon,** eastern zone, c.l. 15.05c, ton lots 15.55c; central zone, add 0.40c and 0.65c; western zone, add 0.5c and 1.85c; **high carbon, high nitrogen,** add 5c to all high carbon ferrochrome prices. Deduct 0.55c for bulk carlots. Spot prices up 0.25c.

Low carbon, eastern zone, bulk, c.l., max. 0.06% C 23c; 0.1% 22.50c, 0.15% 22c, 0.2% 21.50c, 0.5% 21c, 1% 20.50c, 2% 19.50c, add 1c for 2000 lb to c.l.; central zone, add 0.4c for bulk, c.l., and 0.65c for 2000 lb to c.l.; western zone, add 0.5c for bulk, c.l., and 1.85c for 2000 lb to c.l.; carload packed differential 0.45c. Prices are per pound of contained Cr, fob shipping points. **Low carbon, high nitrogen:** Add 2c to low carbon ferrochrome prices. For higher nitrogen low carbon, add 2c for each 0.25% of nitrogen over 0.75%.

Special Foundry Ferrochrome (Cr 62-66%, C about 5-7%): Contract, lump, packed, eastern zone, freight allowed, c.l. 15.60c, ton lots 16.10c, less than ton 16.75c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Deduct 0.55c for bulk carlots.

S. M. Ferrochrome, high carbon (Cr 60-65%, Si, Mn and C 4-6% each): Contract, lump, packed, eastern zone, freight allowed, c.l. 16.15c, ton lots 16.65c, less ton 17.30c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Prices are per lb of contained chromium; spot prices 0.25c higher. Deduct 0.55c for bulk carlots.

S.M. Ferrochrome, low carbon: (Cr 62-66%, Si 4-6%, Mn 4-6% and C 1.25% max.) Contract, carlot, bulk, 20.00c, packed 20.45c, ton lots 21.00c, less ton lots 22.00c, eastern, freight allowed, per pound contained chromium, 20.40c, 20.50c, 20.95c and 22.65c, central; 21.00c, 21.45c, 22 85c and 23.85c, western; spot up 0.25c.

SMZ Alloy: (Si 60-55%, Mn 5-7%, Zr 5-7% and Fe approx. 20%) per lb of alloy contract carlots 11.50c, ton lots 12.00c, less 12.50c, eastern zone, freight allowed; 12.00c, 12.85c and 13.35c central zone; 14.05c, 14.60c and 15.10c, western; spot up 0.25c.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy contract, carlots 25.00c, ton lots 26.00c, less ton lots 27.00c, eastern, freight allowed, 25.50c, 26.75c and 27.75c, central; 27.50c, 28.90c and 29.90c, western; spot up 0.25c.

Silvaz Alloy: (Si 35-40%, Va 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy. Contract, carlots 58.00c, ton lots 59.00c, less 60.00c, eastern freight allowed; 58.50c, 59.75c and 60.75c, central; 60.50c, 61.90c and 62.90c, western; spot up 0.25c.

CMSZ Alloy 4: (Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75% and C 3.00-4.50%). Contract carlots, bulk, 11.00c and packed 11.50c; ton lots 12.00c; less 12.50c, eastern, freight allowed; 11.50c and 12.00c, 12.75c, 13.25c, central; 13.50c and 14.00c, 14.75c, 15.25c, western; spot up 0.25c.

CMSZ Alloy 5: (Cr 50-56%, Mn 4-6%, Si 13.50-16.00%, Zr 0.75-1.25%, C 3.50-5.00%) per lb of alloy. Contract, carlots, bulk, 10.75c, packed 11.25c, ton lots 11.75c, less 12.25c, eastern, freight allowed; 11.25c, 11.75c, 12.50c, 13.00c, central; 13.25c, 13.75c, 14.50c and 15.00c, western; spot up 0.25c.

Ferro-Boron: (B 17.50% min., Si 1.50% max., Al 0.50% max. and C 0.50% max.) per lb of alloy contract ton lots $1.20, less ton lots $1.30, eastern, freight allowed; $1.2075 and $1.3075 central; $1.229 and $1.329, western; spot add 5c.

Manganese-Boron: (Mn 75% approx., B 15-20%, Fe 5% max., Si 1.50% max. and C 3% max.) per lb of alloy. Contract ton lots, $1.89, less $2.01, eastern; freight allowed; $1.903 and $2.023, central; $1.939 and $2.055 western; spot up 5c.

Nickel-Boron: (B 15-18%, Al 1% max., Si 1.50% max., C 0.50% max. Fe 3% max., Ni, balance), per lb of alloy. Contract, 5 tons or more, $1.90, 1 ton to 5 tons, $2.00, less than ton $2.10, eastern, freight allowed; $1.9125, $2.0125 and $2.1125, central; $1.9445, $2.0445 and $2.1445, western; spot same as contract.

Chromium-Copper: (Cr 5-11%, Cu 88-90%, Fe 1% max., Si 0.50% max.) contract, any quantity, 45c, eastern, Niagara Falls, N. Y., basis, freight allowed to destination, except to points taking rate in excess of St. Louis rate to which equivalent of St. Louis rate will be allowed; spot up 2c.

Vanadium Pentoxide, technical grade: Fused, approx. 89-92% V_2O_5 and 5.84% NA_2O; or air dried, 83-85% V_2O_5 and 5.15% NA_2O, $1.10 per lb contained V_2O_5, fob plant, freight allowed on quantities of 25 lb and over to St. Louis.

Calcium metal; cast: Contract ton lots or more $1.35, less, $1.60, pound of metal; $1.36 and $1.61 central, $1.40 and $1.65, western; spot up 5c.

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%), per lb of alloy. Contract, carlots, 15.50c, ton lots 16.50c and less 17.00c, eastern, freight allowed; 16.00c, 17.35c, and 17.85c, central; 18.05c, 19.10c and 19.60c western; spot up 0.25c.

Calcium - Silicon: (Ca 30-35%, Si 60-65% and Fe 3.00% max.), per lb of alloy. Contract, carlot, lump 13.00c, ton lots 14.50c, less 15.50c, eastern, freight allowed; 13.50c, 15.25c and 16.25c central; 15.55c, 17.40c and 18.40c, western; spot up 0.25c.

Briquets Ferromanganese: (Weight approx. 3 lb and containing exactly 2 lb Mn) per lb of briquets. Contract, carlots, bulk 0.0605c, packed 0.063c, tons 0.0655c, less 0.068c, eastern, freight allowed; 0.063c, 0.0655c, 0.0755c and 0.078c, central; 0.066c, 0.0685c, 0.0855c and 0.088c, western; spot up 0.25c.

Briquets, Ferrochrome: Containing exactly 2 lb Cr, packed, eastern zone, c.l. 9.50c, ton lots 9.80c, less than ton 10.10c, central zone, add 0.3c for c.l. and 0.5c for smaller lots; western zone, add 0.70c for c.l. and 2c for smaller lots. Deduct 0.30c for bulk carlots. Prices per lb of briquets; spot prices 0.25c higher.

Silicomanganese, containing exactly 2 lb Mn and about ½ lb Si, eastern zone, bulk, c.l. 5.80c, ton lots 6.35c; central zone, add 0.25c for c.l. and 1c for ton lots; western, add 0.55c for c.l. and 0.20c for ton lots. **Ferrosilicon,** weighing about 5 lb and containing exactly 2 lb Si, or about 2½ lb and containing exactly 1 lb Si, packed, eastern zone, c.l. 3.90c, ton lots 4.15c, less ton lots 4.45c; central zone, add 0.15c for c.l. and 0.40c for smaller lots; western zone, add 0.30c for c.l. and 0.45c for smaller lots. Prices are f.o.b. shipping point, freight allowed; spot prices 0.25c higher. Deduct 0.30c for bulk carlots.

Ferromolybdenum: 55-75% per lb contained Mo, fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.

Ferrophosphorus: 17-19%, based on 18% P content with unitage of $3 for each 1% of P above or below the base; gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferrosilicon: Contract, lump, packed; eastern zone quotations: 90-95% c.l. 12.65c, ton lots 13.10c, smaller lots 13.50c; 80-90% c.l. 10.35c, ton lots 10.85c, smaller lots 11.35c; 75% c.l. 9.40c, ton lots 9.95c, smaller lots 10.45c; 50% c.l. 7.90c, ton lots 8.50c, smaller lots 9.10c. Prices are fob shipping point, freight allowed, per lb of contained Si. Spot prices 0.25c higher on 80-90%, 0.30c on 75%, 0.45c on 50%. Deduct 0.85c for bulk carlots.

Grainal: Vanadium Grainal No. 1 87.5c; No. 6, 60c; No. 79, 45c; all fob Bridgeville, Pa., usual freight allowance.

Silicon Metal: Min. 97% Si and max. 1% Fe, eastern zone, bulk, c.l., 12.90c; 2000 lb to c.l., 13.45c; central, 13.20c and 13.90c; western, 13.85c and 16.80c; min. 96% Si and max. 2% Fe, eastern, bulk; c.l., 12.50c, 2000 lb to c.l., 13.10c; central, 12.80c and 13.55c; western, 13.45c and 16.50c, fob shipping point, freight allowed. Price per lb contained Si.

Manganese Metal: (Min. 96% Mn, max. 2% Fe), per lb of metal, eastern zone, bulk, c.l., 30c, 2000 lb to c.l., 32c, central, 30.25c, and 33c; western, 30.55c and 35.05c.

Ferrotungsten: Spot 10,000 lb or more, per lb contained W, $1.90; contract, $1.88; freight allowed as far west as St. Louis.

Tungsten Metal Powder: Spot, not less than 97%, $2.50-$2.60; freight allowed as far west as St. Louis.

Ferrotitanium: 40-45%, R.R. freight allowed, per lb contained Ti; ton lots $1.23; less-ton lots $1.25; eastern. Spot up 5c per lb.

Ferrotitanium: 20-25%, 0.10 maximum carbon; per lb contained Ti; ton lots $1.35; less-ton lots $1.40 eastern. Spot up 5c per lb.

High-Carbon Ferrotitanium: 15-20% contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C $142.50; 3-5% C $157.50.

Carbortam: B 0.90 to 1.15% net ton to carload, 8c per lb fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Bortam: B 1.5-1.9%, ton lots, 45c lb; less-ton lots, 50c lb.

Ferrovanadium: Va 35-55%, contract basis, per lb contained Va, fob producers plant with usual freight allowances; open-hearth grade $2.70; special grade $2.80; highly-special grade $2.90.

Zirconium Alloys: Zr 12-15%, per lb of alloy, eastern contract, carlots, bulk, 4.60c, packed 4.80c, ton lots 4.80c, less tons 5c, carloads, bulk, per gross ton $102.50; packed $107.50; ton lots $108; less-ton lots $112.50. Spot up $5 per ton.

Zirconium Alloy: Zr 35-40%, eastern, contract basis, carloads in bulk or package, per lb of alloy 14.00c; gross ton lots 15.00c; less-ton lots 16.00c. Spot up ¼c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) contract basis fob Niagara Falls, N. Y., lump per lb 5.88c; ton lots 6.38c; less 6.88c. Spot up ½c.

Siminal: (Approx. 20% each Si, Mn, Al) Contract, freight not exceeding St. Louis rate allowed, per lb alloy; carlots 8c; ton lots 8.75c; less-ton lots 9.25c.

Borosil: 3 to 4% B, 40 to 45% Si, $6.25 lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Following prices are quotations developed by editors of STEEL in the various centers. Quotations are on gross tons.

PHILADELPHIA:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$18.75
No. 2 Heavy Melt. Steel	18.75
No. 2 Bundles	18.75
No. 3 Bundles	16.75
Mixed Borings, Turnings	13.75
Machine Shop Turnings	13.75
Billet, Forge Crops	23.75
Bar Crops, Plate Scrap	21.25
Cast Steel	21.25
Punchings	21.25
Elec. Furnace Bundles	19.75
Heavy Turnings	18.25

Cast Grades
(Fob Shipping Point)

Heavy Breakable Cast	16.50
Charging Box Cast	19.00
Cupola Cast	20.00
Unstripped Motor Blocks	17.50
Malleable	22.00
Chemical Borings	16.51

NEW YORK:

(Dealers' buying prices)

No. 1 Heavy Melt. Steel	$15.33
No. 2 Heavy Melt. Steel	15.33
No. 2 Hyd. Bundles	15.33
No. 3 Hyd. Bundles	13.33
Chemical Borings	14.33
Machine Turnings	10.33
Mixed Borings, Turnings	10.33
No. 1 Cupola	20.00
Charging Box	19.00
Heavy Breakable	16.50
Unstripped Motor Blocks	17.50
Stove Plate	19.00

BOSTON:

(Fob shipping points. Boston differential 99c higher, steelmaking grades; Providence, $1.09 higher)

No. 1 Heavy Melt. Steel	$14.06
No. 2 Heavy Melt. Steel	14.06
No. 1 Bundles	14.06
No. 2 Bundles	14.06
No. 1 Busheling	14.06
Machine Shop Turnings	9.06
Mixed Borings, Turnings	9.06
Short Shovel Turnings	11.06
Chemical Borings	13.31
Low Phos. Clippings	16.56
No. 1 Cast	20.00
Clean Auto Cast	20.00
Stove Plate	19.00
Heavy Breakable Cast	16.50

BUFFALO:

(Delivered consumers' plant)

No. 1 Heavy Melt. Steel	$19.25
No. 2 Heavy Melt. Steel	19.25
No. 1 Bundles	19.25
No. 2 Bundles	19.25
No. 1 Busheling	19.25
Machine Turnings	14.25
Short Shovel Turnings	16.25
Mixed Borings, Turn.	14.25
Cast Iron Borings	15.25
No. 1 Cast	20.00
Low Phos.	21.75

PITTSBURGH:

(Delivered consumers' plant)

Railroad Heavy Melting	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
No. 2 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Mach. Shop Turnings	15.00
Mixed Borings, Turnings	15.00
No. 1 Cupola Cast	*20.00
Heavy Breakable Cast	*16.50
Cast Iron Borings	16.00
Billet, Bloom Crops	25.00
Sheet Bar Crops	22.50
Plate Scrap, Punchings	22.50
Railroad Specialties	24.50
Scrap Rail	21.50
Axles	26.00
Rail 3 ft. and under	23.50
Railroad Malleable	22.00

* Shipping point.

CLEVELAND:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp Bundles	19.50
No. 1 Busheling	19.50
Mach. Shop Turnings	14.50
Short Shovel Turnings	16.50
Mixed Borings, Turnings	14.50
No. 1 Cupola Cast	20.00
Heavy Breakable Cast	16.50
Cast Iron Borings	13.50-14.00
Billet, Bloom Crops	24.50
Sheet Bar Crops	22.00
Plate Scrap, Punchings	22.00
Elec. Furnace Bundles	20.50

VALLEY:

(Delivered consumer's plant)

No. 1 R.R. Heavy Melt.	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Cast Iron Borings	16.00
Machine Shop Turnings	15.00
Low Phos. Plate	22.50

MANSFIELD:

(Delivered consumer's plant)

Machine Shop Turnings	$15.00

CINCINNATI:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp. Bundles	19.50
Machine Turnings	10.50-11.00
Shoveling Turnings	11.50-13.00
Cast Iron Borings	11.50-12.00
Mixed Borings, Turnings	10.50-11.00
No. 1 Cupola Cast	20.00
Breakable Cast	16.50
Low Phosphorus	21.00-22.00
Scrap Rails	20.50-21.00
Stove Plate	18.50-19.00

DETROIT:

(Delivered consumer's plant)

Heavy Melting Steel	$17.32
No. 1 Busheling	17.32
Hydraulic Bundles	17.32
Flashings	17.32
Machine Turnings	12.32
Short Shovel, Turnings	14.32
Cast Iron Borings	13.32
Low Phos. Plate	19.82
No. 1 Cast	20.00
Heavy Breakable Cast	16.50

CHICAGO:

(Delivered consumer's plant; cast grades fob shipping point; railroad grades fob tracks)

No. 1 R.R. Heavy Melt.	$19.75
No. 1 Heavy Melt. Steel	18.75
No. 2 Heavy Melt. Steel	18.75
No. 1 Ind. Bundles	18.75
No. 2 Dlr. Bundles	18.75
Baled Mach. Shop Turn.	18.75
No. 3 Galv. Bundles	16.75
Machine Turnings	13.75
Mix. Borings, Sht. Turn.	13.75
Short Shovel Turnings	15.75
Cast Iron Borings	14.75
Scrap Rails	20.25
Cut Rails, 3 feet	22.25
Cut Rails, 18-inch	23.50
Rerolling Rails	22.25
Angles, Splice Bars	22.25
Plate Scrap, Punchings	21.25
Railroad Specialties	22.75
No. 1 Cast	20.00
R.R. Malleable	22.00

ST. LOUIS:

(Delivered consumer's plant; cast grades fob shipping point)

Heavy Melting	$17.50
No. 1 Locomotive Tires	21.00
Misc. Rails	19.00
Railroad Springs	22.00
Bundled Sheets	17.50
Axle Turnings	17.00
Machine Turnings	10.50
Shoveling Turnings	12.50
Rerolling Rails	21.00
Street Car Axles	24.50
Steel Rails, 3 ft.	21.50
Steel Angle Bars	21.00
Cast Iron Wheels	20.00
No. 1 Cupola Cast	20.00
Charging Box Cast	19.00
Railroad Malleable	22.00
Breakable Cast	16.50
Stove Plate	19.00
Grate Bars	15.25
Brake Shoes	15.25

BIRMINGHAM:

(Delivered consumer's plant)

Billet Forge Crops	$22.50
Structural, Plate Scrap	19.00
Scrap Rails Random	18.50
Rerolling Rails	20.50
Angle Splice Bars	20.50
Solid Steel Axles	24.00
Cupola Cast	20.00
Stove Plate	19.00
Long Turnings	11.00
Cast Iron Borings	13.00
Iron Car Wheels	20.00

LOS ANGELES:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.00
No. 2 Heavy Melt. Steel	13.00
No. 1, 2 Dlr. Bundles	12.00
Machine Turnings	5.50
Mixed Borings, Turnings	5.50
No. 1 Cast	20.00

SAN FRANCISCO:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$17.00
No. 2 Heavy Melt. Steel	17.00
No. 1 Busheling	17.00
No. 1, No. 2 Bundles	17.00
No. 3 Bundles	9.00
Machine Turnings	7.00
Billet, Forge Crops	15.50
Bar Crops, Plate	15.50
Cast Steel	15.50
Cut, Structural, Plate 1 ft and under	18.00
Alloy-free Turnings	7.00
Tin Can Bundles	14.50
No. 2 Steel Wheels	21.50
Iron, Steel Axles	24.00
No. 2 Cast Steel	20.50
Uncut Frogs, Switches	18.00
Scrap Rails	18.50
Locomotive Tires	20.50

SEATTLE:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.50
No. 2 Heavy Melt. Steel	14.50
Heavy Railroad Scrap	15.50

(Fob shipping point)

No. 1 Cupola Cast	20.00

LOGEMANN
Presses for Sheet Scrap

THE NATION NEEDS YOUR SHEET SCRAP!

In mills, industrial plants and scrap yards, LOGEMANN SCRAP PRESSES are working day and night to prepare sheet scrap for the furnaces.

Sheet mills particularly recognize the value of the years of experience and the performance records which back up LOGEMANN designs and workmanship.

The line includes scrap presses *designed for mill Service,* presses *designed for automobile plant conditions,* presses *designed for general plant applications.* Write for details.

The scrap press illustrated operates in one of the largest industrial plants. Compresses scrap from three directions to produce high-density mill size bundles. Built in various capacities.

LOGEMANN BROTHERS COMPANY
3126 W. Burleigh St. **Milwaukee, Wisconsin**

NONFERROUS METAL PRICES

Copper: Electrolytic or Lake from producers in carlots 14.37½c, del. Conn.; less carlots 14.50c, refinery. Dealers may add ¾c for 5000 lb to carload; 1c, 1000-4999 lb; 1½c, 500-999 lb; 2c, 0-499 lb. Casting, 14.12½c, refinery, 20,000 lb or more; 14.37½c, less than 20,000 lb.

Brass Ingot: 85-5-5-5 (No. 115) 15.25c; 88-10-2 (No. 215) 18.50c; 80-10-10 (No. 305) 18.00c; No. 1 yellow (No. 405) 12.25c; carlot prices, including 25c per 100 lb freight allowance; add ¼c for less than 20 tons.

Zinc: Prime western 8.25c, select 8.35c, brass special 8.50c, intermediate 8.75c, high grade 9.25c, E. St. Louis, for carlots. For 20,000 lb to carlots add 0.15c; 10,000-20,000 lb 0.25c; 2000-10,000 lb 0.40c; under 2000 lb 0.50c.

Lead: Common 8.10c, chemical 8.20c, corroding, 8.20c, E. St. Louis for carlots; add 5 points for Chicago, Minneapolis-St. Paul, Milwaukee-Kenosha districts; add 15 points for Cleveland - Akron - Detroit area, New Jersey, New York state, Texas, Pacific Coast, Richmond, Indianapolis-Kokomo; add 20 points for Birmingham, Connecticut, Boston - Worcester, Springfield, New Hampshire, Rhode Island.

Primary Aluminum: 99% plus, ingots 15.00c del., pigs 14.00c del.; metallurgical 94% min. 13.50c del. Base 10,000 lb and over; add ½c 2000-9999 lb; 1c less through 2000 lb.

Secondary Aluminum: Piston alloy (No. 122 type) 12.75c; No. 12 foundry alloy (No. 2 grade) 12.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1 (95-97½%) 13.50c; grade 2 (92-95%) 12.50c; grade 3 (90-92%) 11.62½c; grade 4 (85-90%)10.87½c. Above prices for 30,000 lb. or more; add ¼c 10,000-30,000 lb; ½c 5000-10,000 lb; ¾c 1000-5000 lb; 1¼c less than 1000 lb. Prices include freight at carload rate up to 75c per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots (4-notch, 17 lb) 20.50c per lb, carlots; 22.50c 100 lb to c.l. Extruded 12-in. sticks 27.50c, carlots; 29.50c 100 lb to c.l.

Tin: Prices ex-dock, New York in 5-ton lots. Add 1 cent for 2240-11,199 lb, 1¼c 1000-2239, 2½c 500-999, 3c under 500. Grade A, 99.8% or higher (includes Straits), 52.00c; Grade B, 99.8% or higher, not meeting specifications for Grade A, with 0.05% max. arsenic, 51.87½c; Grade C, 99.65-99.79% incl. 51.62½c; Grade D, 99.50-99.64% incl., 51.50c; Grade E, 99-99.49% incl. 51.12½c; Grade F, below 99% (for tin content), 51.00c.

Antimony: American bulk carlots fob Laredo, Tex., 99.0% to 99.8% and 99.8% and over but not meeting specifications below, 14.50c; 99.8% and over (arsenic, 0.05% max.; other impurities, 0.1% max.) 15.00c. On producers' sales add ¼c for less than carload to 10,000 lb; ½c for 9999-224 lb; and 2c for 223 lb and less; on sales by dealers, distributors and jobbers add ½c, 1c, and 3c, respectively.

Nickel: Electrolytic cathodes, 99.5%, fob refinery 35.00c lb; pig and shot produced from electrolytic cathodes 36.00c; "F" nickel shot or ingot for additions to cast iron, 34.00c.

Mercury: Open market, spot, New York, $98-$100 per 76-lb flask.

Arsenic: Prime, white, 99%, carlots, 4.00c lb.

Beryllium-Copper: 3.75-4.25% Be, $14.75 per lb contained Be.

Cadmium: Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other "regular" straight or flat forms $1.25 lb, del.; anodes, balls, discs and all other special or patented shapes, $1.30.

Cobalt: 97-99%, $1.50 lb, for 550 lb (bbl.); $1.52 lb for 100 lb (case); $1.57 lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Indium: 99.9%, $2.25 per troy ounce.

Silver: Open market, N. Y. 70.625 per ounce.

Platinum: $67-$70 per ounce.

Palladium: $24 per troy ounce.

Iridium: $125 per troy ounce.

Rolled, Drawn, Extruded Products

(Copper and brass product prices based on 14.37½c, Conn., for copper. Freight prepaid on 100 lb or more.)

Sheet: Copper 25.81c; yellow brass 23.67c; commercial bronze, 95% 26.14c, 90% 25.81c; red brass, 85% 24.98c, 80% 24.66c; best quality 24.38c; phosphor bronze, grade A 4% or 5%, 43.45c; Everdur, Duronze or equiv., hot rolled, 30.88c; naval brass 28.53c; manganese bronze 31.99c; muntz metal 26.78c; nickel silver 5% 32.38c.

Rods: Copper, hot rolled 22.16c, cold drawn 23.16c; yellow brass 18.53c; commercial bronze, 95% 25.83c, 90% 25.50c; red brass, 85% 24.67c; 80% 24.35c; best quality 24.07c; phosphor bronze, grade A 4% or 5% 43.70c; Everdur, Duronze or equiv. cold drawn, 29.82c; naval brass 22.59c; manganese bronze 25.93c; muntz metal 22.34c; nickel silver 5% 34.44c.

Seamless Tubing: Copper 25.85c; yellow brass 26.43c; commercial bronze 90% 28.22c; red brass 85% 27.64c, 80% 27.32c; best quality brass 26.79c; phosphor bronze, grade A 5% 44.70c.

Copper Wire: Bare, soft, fob eastern mills, carlots 19.89c, less carlots 20.39c; weatherproof, fob eastern mills, carlot 22.07c, less carlots 22.57c; magnet, delivered, carlots, 23.30c, 15,000 lb or more 23.55c, less carlots 24.05c.

Aluminum Sheets and Circles: 2s and 3s flat mill finish, base 30,000 lb or more del.; sheet widths as indicated; circle diameter 9" and larger:

Gage	Width	Sheets	Circles
.249"-7	12"-48"	22.70c	25.20c
8-10	12"-48"	23.20c	25.70c
11-12	26"-48"	24.20c	27.00c
13-14	26"-48"	25.20c	28.50c
15-16	26"-48"	26.40c	30.40c
17-18	26"-48"	27.90c	32.90c
19-20	24"-42"	29.80c	35.30c
21-22	24"-42"	31.70c	37.20c
23-24	3"-24"	25.60c	29.20c

Lead Products: Prices to jobbers; full sheets 11.25c; cut sheets 11.50c; pipe 9.90c, New York, 10.00c Philadelphia, Baltimore, Rochester and Buffalo, 10.50c Chicago, Cleveland, Worcester and Boston.

Zinc Products: Sheet fob mill, 13.15c, 36,000 lb. and over deduct 7%. Ribbon and strip 12.25c, 3000-lb lots deduct 1%, 6000 lb 2%, 9000 lb 3%, 18,000 lb 4%, carloads and over 7%. Boiler plate (not over 12") 3 tons and over 11.00c; 1-3 tons 12.00c; 500-2000 lb 12.50c; 100-500 lb 13.00c; under 100 lb 14.00c. Hull plate (over 12") add 1c to boiler plate prices.

PLATING MATERIALS

Chromic Acid: 99.75%, flake, del., carloads 16.25c; 5 tons and over 16.75c; 1-5 tons 17.25c; 400 lb to 1 ton 17.75c; under 400 lb 18.25c.

Copper Anodes: In 500-lb lots, fob shipping point, freight allowed, cast oval over 15 in., 25.125c; curved, 20.375c; round oval straight, 19.375c; electro-deposited, 18.875c.

Copper Carbonate: 52-54% metallic Cu, 250 lb barrels 20.50c.

Copper Cyanide: 70-71% Cu, 100-lb kegs or bbls 34.00c, fob, Niagara Falls.

Sodium Cyanide: 96%, 200-lb drums 15.00c; 10,000-lb lots 13.00c fob Niagara Falls.

Nickel Anodes: 500-2999 lb lots; cast and rolled carbonized 47.00c; rolled depolarized 48.00c.

Nickel Chloride: 100-lb kegs or 275-lb bbls 18.00c lb, del.

Tin Anodes: 1000 lb and over 58.50c del.; 500-999 59.00c; 200-499 59.50c; 100-199 61.00c.

Tin Crystals: 400 lb bbls 39.00c fob Grasselli, N. J.; 100-lb kegs 39.50c.

Sodium Stannate: 100 or 300-lb drums 36.50c, del.; ton lots 35.50c.

Zinc Cyanide: 100-lb kegs or bbls 33.00c fob Niagara Falls.

Scrap Metals

Brass Mill Allowances: Prices for less than 15,000 lb fob shipping point. Add ¾c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	12.000	12.000	11.250
Yellow brass	9.875	9.625	9.125
Commercial bronze			
95%	11.250	11.000	10.500
90%	11.125	10.875	10.375
Red brass			
85%	10.875	10.625	10.125
80%	10.875	10.625	10.125
Best quality (71-79%)	10.500	10.250	9.750
Muntz metal	9.250	9.000	8.500
Nickel silver, 5%	10.500	10.250	5.250
Phos. br., A, B, 5%	12.750	12.500	11.500
Naval brass	9.500	9.250	8.750
Manganese bronze	9.500	9.250	8.750

Other than Brass Mill Scrap: Prices apply on material not meeting brass mill specifications and are fob shipping point; add ¾c for shipment of 60,000 lb of one group and ½c for 20,000 lb of second group shipped in same car. Typical prices follow:

(Group 1) No. 1 heavy copper and wire, No. 1 tinned copper, copper borings 11.50c; No. 2 copper wire and mixed heavy copper, copper tuyeres 10.50c

(Group 2) Soft red brass and borings, aluminum bronze 10.75c; copper-nickel solids and borings 11.00c; lined car boxes, cocks and faucets 9.50c; bell metal 17.25c; babbitt-lined brass bushings 14.75c.

(Group 3) Admiralty condenser tubes, brass pipe 8.75c; muntz metal condenser tubes 8.25c; old rolled brass 8.25c; manganese bronze solids: (lead 0%-0.40%) 8.00c; (lead 0.41%-1%) 7.00c; manganese bronze borings, 7.25c.

Aluminum Scrap: Price fob point of shipment, truckloads of 5000 pounds or over; Segregated solids, 2S, 3S, 5c lb, 11, 14, etc., 3 to 3.50c lb. All other high grade alloys 5c lb. Segregated borings and turnings, wrought alloys, 2, 2.50c lb. Other high-grade alloys 3.50c, 4.00c lb. Mixed plant scrap, all solids, 2, 2.50c lb borings and turnings one cent less than segregated.

Lead Scrap: Prices fob point of shipment. For soft and hard lead, including cable lead, deduct 0.75c from basing point prices for refined metal.

Zinc Scrap: New clippings 7.25c, old zinc 5.75c, fob point of shipment, add ½c for 10,000 lb or more. New die cast scrap 4.95c, radiator grilles 4.95c, add ½c for 20,000 lb or more. Unsweated zinc dross, die cast slab 5.80c, any quantity.

Nickel, Monel Scrap: Prices fob point of shipment; add ½c for 2000 lb or more of nickel or cupro-nickel shipped at one time and 20,000 lb or more of Monel. Converters (dealers) allowed 2c premium.

Nickel: 98% or more nickel and not over ½% copper 23.00c; 90-98% nickel, 23.00c per lb nickel contained.

Cupro-nickel: 90% or more combined nickel and copper 26.00c per lb contained nickel, plus 8.00c per lb contained copper; less than 90% combined nickel and copper 26.00c for contained nickel only.

Monel: No. 1 castings, turnings 15.00c; new clipping 20.00c; soldered sheet 18.00c.

Sheets, Strip . . .

Revised quotas for fourth quarter expected if former perference ratings are again put in effect

Sheet & Strip Prices, Page 182

New York—With the probable restoration of CC and MM priorities after Sept. 30, sheet producers who have recently set up quotas for fourth quarter will in all likelihood have to make further revisions. However, revision in the quotas has been more or less contemplated by both sellers and consumers, as it has been believed that if Direction 12 which was put into effect for third quarter, was not extended, some other similar preference system would be set up for the closing quarter, inasmuch as requirements for the housing and agricultural programs, particularly housing, would likely be urgent for some months. Sheet sellers believe restoration of MM and CC priorities, which were suspended Jan. 21, at the beginning of the steel strike, will impose a greater burden than the existing Direction 12 priorities.

The MM rating, it may be recalled, is the military rating and can be assigned by the Army and Navy and other military and governmental agencies under provisions of Directive 41. Incidentally, at present some electronic equipment is up before the trade here, involving electrical sheets and also some 16-gage panel stock which may soon be placed on an MM priority.

The CC rating is the instrument by which CPA may generally help a manufacturer to secure some particular piece of equipment or some certain material for lack of which he is unable to start production or expand it to his minimum economic rate. Also special considerations, other than the foregoing, are often behind assigning of CC ratings. Wherever preference system is finally decided upon, housing needs will be given important status, possibly widen HH ratings, which were originally set up on a basis equal to CC ratings.

Cold-rolled strip sellers appear to be behind anywhere from two to two and a half months on present commitments. They have the equipment to roll the strip but continue to have difficulty getting hot strip from mills. They are particularly behind on all low carbon grades, reflecting inability to get mill shipments. Cold rollers are booked solidly over the remainder of the year and in general have not opened books for new tonnage beyond. However, cold rollers are making some exceptions, where tonnage is particularly attractive and is from a regular account.

Philadelphia—One exception to the increasingly tight trend in sheets is an easing in supply of stainless. While most producers have little or nothing to offer for this year, promises are not as extended as recently. Some sellers, it appears, are able to work in some tonnage for early fourth quarter. An appreciable improvement is noted in polished stainless deliveries as more polishing facilities are being installed.

Boston—For narrow cold strip production hot strip supply is slightly improved but not enough to stabilize operations. Substantial inquiry for flat-rolled, notably sheets, including galvanized, and electrolytic zinc-coated, is forthcoming from consumers who have taken contracts for fabrication within recent periods. Volume seeking place on mill schedules is substantial and growing. Certified orders are still forcing revisions in flat-rolled. Mills are not opening books formally for next year, pending clarification of carryovers, which in some instances extend into May.

Chicago—With noticeable improvement in supply of freight cars a few days ago, mills have been able to restore and maintain production and in most cases to move material that had piled up in shipping departments. Orders for sheets and strip continue heavy and pressure for deliveries is extreme. Comparatively speaking, tonnage covered by directive for the veterans' housing and farm implement programs does not aggregate much more than 5 per cent. The directive requiring up to 2 per cent for export if orders for this are received does not seem likely to affect local mills in any important way. Midwestern steelmakers do not normally export much except tin plate.

Cincinnati—District sheet mills continue working over fourth quarter schedules, aware that the carryover from this quarter will cut, to a disappointing degree, tonnages originally expected. Directives for warehouses and for housing and agricultural implements, have slowed deliveries to others and will prove an important influence in creating the carryover.

Steel Bars . . .

Mill books filled for year on hot carbon stock; cold-rolled easier; alloy bars available in September

Bar Prices, Page 182

New York—With bar mills booked solidly on all sizes of hot carbon bars and flats until the end of this year and not having opened books for 1947, new buying is being confined to certain sizes of cold-drawn carbon bars, which are still available for shipment in the closing weeks of the year, and alloy bars, which in hot-rolled grades are available for September delivery and in the other cold-drawn and special treatment grades for a little later, four to six weeks on the average. Most producers of hot carbon bars are still behind on current commitments, with little likelihood of their catching up this year. On certain smaller sizes, some producers are confident that at the end of the year they will have a carryover of at least two months.

Delivered prices on hot carbon bars here are now 2.86c, as compared with 2.84c. This price became effective Aug. 1 as a result of the approval by New York state of a 6 per cent increase in its intrastate rates. Whether the state will later approve the additional 5 per cent, which the Interstate Commerce Commission approved for interstate shipments in general classification territory, remains to be seen. The new increase is predicated on a rate of 36 cents from Buffalo, the basing point on hot carbon bars for shipment here, compared with the former rate of 34 cents.

Pittsburgh—Laconic commentary on this district's supply of smaller sizes of hot-rolled carbon bars is the fact that one mill is now rolling orders that were originally scheduled for last February. Generally speaking, capacity operations for the rest of this year will cover orders now on books, although a leading producer expects to have openings available in fourth quarter for sizes 3 1/2-in. and larger. Volume of post war demand for large diameter hot-rolled bars is still something of a surprise to interests here. Operations of nonintegrated cold finishers are still curtailed by hot-rolled scarcities, but observers hope that the present developing supply picture will be favorably fixed in the next 30 days. In the meantime, cold-finished alloy steels in all shapes and sizes are enjoying fairly reasonable delivery promises, November or December.

Philadelphia—In spite of the fact that hot carbon bar mills generally have not opened books for 1947, commitments run well into first quarter, especially in smaller sizes, 1½-inches and under. Producers are well behind on current promises and see little chance of catching up over the remainder of this year. Hot and cold-rolled alloy bars appear to be the only grades on which fairly early delivery can be made. Some sellers of hot alloy bars can make shipments in September.

Cleveland—No break in the jam of bar orders is expected this year, especially following recent developments which indicate an even larger carryover into first quarter than had been anticipated. While the total volume is described as not excessive, certified orders for September delivery will force postponement to fourth quarter of some scheduled shipments. CC and MM ratings have been made valid again but these will not disturb schedules appreciably. In addition, bar sellers expect to receive orders carrying the CXS symbol which will be used to obtain the September tonnage required under the government's export program. Government agencies and railroads are considering a program for construction of 50,000 additional box cars this year. If such a program materializes, steel producers are of the opinion that directives for bar tonnages will have to be issued.

Seattle—Bar mills, with a backlog of nine months, are operating as close to capacity as labor supply permits, with many small jobs of 40 to 60 tons being rolled. Reinforcing bars run about 60 per cent and merchant bars about 40 per cent, against a prewar ratio of about 75 and 25 per cent. Merchant bar demand has slackened, due to reduced ship construction, but still is a strong factor.

Wire . . .

Wire Prices, Page 183

New York — While wire production generally is beginning to show some improvement, leading producers continue well behind on current commitments and doubt if they will get caught up on orders this year. Some producers, in fact, look for little substantial improvement in production before fourth quarter, because of various handicaps,

such as shortage of rods, inability to obtain equipment for replacements and expansion and inability to get full production cut of labor. Shortage of copper and zinc is an important deterring factor in some products and it is doubtful if there will be any real improvement in supply of these metals this year, in the opinion of some wire producers.

Steel Plates . . .

Mills have backlogs well into next year despite cancellation of much shipbuilding tonnage

Plate Prices, Page 183

New York — Despite further rapid curtailment in ship construction and the resumption this month of plate production at Geneva, Utah, eastern plate producers see considerable work ahead for some months. As a matter of fact, they are booked up for the current year, and on the basis of the present outlook will have a carryover of 1946 commitments of at least one or two months. Certain producers, having booked some new tonnage for shipment beyond the end of the year, are to all practical intents and purposes, covered until second quarter of 1947. With this much backlog already on hand, it would appear the industry is assured of at least reasonably good operations into next summer.

The outlook in ship construction is depressed by the probability that the Maritime Commission will not go ahead at this time with construction of seven liners. Two, to have been operated by Moore-McCormack in the Latin American route, appear to have been definitely postponed for at least a year. Also in a doubtful category are three fast Mediterranean liners planned for the American Export Line, on which Bethlehem Steel Co. some time ago submitted low bids, and two 912-foot express passenger liners for the American President Line's Trans-Pacific run, on which the Maritime Commission had planned to open bids Sept. 20.

Boston—While floor plates in heavier gages are available in September, most wanted thicknesses are now in October, with demand holding well. Selectivity in acceptance of plate volume is apparent as some producers are taking tonnage for next year, although extent of carryovers is uncertain. A fabricator requiring close to 4000 tons 3/8 and 7/16-inch plates for pipe line work and penstocks, having placed 500 tons, is appealing to Washington for assistance in finding the remainder. Most is for a 48-inch line at Springfield, Mass.

Philadelphia—Four district plate mills are being forced to restrict production because of continued shortage of scrap and pig iron. Indications are that they, with various other producers of steel, will be hampered for some time, with arrearages accumulating rather than being reduced. At present plate mill arrearages range from one to three months, which with future commitments, provides a backlog extending well into first quarter, if not beyond in one or two cases.

Except for shipyard requirements, which continue to taper rapidly, plate demand is active and well diversified. Current inquiry includes 700 tons for 42 and 48-inch water pipe for Philadelphia.

Structural Shapes . . .

Output increases but does not gain on demand as more large projects receive CPA approval

Structural Shape Prices, Page 183

Boston—Bids are in on 40 bridges for the Maine Turnpike, Portland-Kittery section, close to 4500 tons of structural steel required, opening postponed from July 25. These bridges range from 900 to 25 tons, many of them being small. Active also is the central telephone building at Boston, which will eventually take around 16,000 tons.

Philadelphia—Shape mills and fabricating shops have substantial backlogs, although new building projects are irregular, reflecting principally CPA limitations. During the period from July 19 to July 25, inclusive, the local district CPA office approved 32 projects, valued at $1,265,896 and rejected 31, valued at $2,022,828.

New York—Several important structural jobs are pending, including 4500 tons for the Abraham Lincoln housing project, on which general contractor bids had been postponed until July 31, and 4000 tons for a section of the West side highway in lower Manhattan, on which bids have been postponed until Aug. 7. Also pending are approximately 1300 tons for the Battery Parking Garage of the New York Port Authority, on which the Corbetta Construction Co. is reported to be the only bidder. A leading award involves 1050 tons for a section of the Brooklyn-Battery tunnel approach on the Manhattan side, placed with Bethlehem Steel Co., Bethlehem, Pa. A few smaller jobs also have been reported. However, structural demand in general continues to taper, due in part to seasonal influences, although CPA restrictions, designed to expedite the National housing program, are the principal depressing factors.

Chicago—Structural fabricators continue handicapped by inadequate flow of plain shapes from mills, both as to tonnage and assortment of sizes. New inquiry is light, as it has been for several weeks, because prospective builders and contractors recognize the futility of attempting to start construction under present steel famine conditions. Volume of new work also is held down by inability or delay in getting CPA approval.

Seattle—Shapes continue in strong demand with fabricators unable to bid on many projects because of full schedules or scarcity of material. Shipments are far short of requirements and inventories are nearly exhausted in many instances. Pending business includes shapes for the Fallon relift pumping plant at the Buffalo Rapids project in Montana. Reclamation Bureau, Denver, will open bids for this project Aug. 26 and on the same date for material for a 40 x 60-foot prefabricated machine shop for Nyssa, Oreg., and for a steel warehouse for the Coulee dam project.

HANNATEN IRON INGOT
10 POUNDS
GRADES:
BASIC
SILVERY
FOUNDRY
MALLEABLE
FERRO-SILICON
BRANDS:
SUSQUEHANNA
BUFFALO
DETROIT
Smaller . . . easier to handle . . . finer grain structure . . . more adaptable to the varied requirements of foundry operation. That's the new HannaTen ingot, produced in all grades of Hanna iron. Take advantage of this important development to attain more uniform distribution in the melt, to assure more accurate control of composition. It's another great Hanna "first."
The Hanna Furnace Corporation
Merchant Pig Iron Division of National Steel Corporation
BUFFALO · DETROIT · NEW YORK · PHILADELPHIA · BOSTON
. . . THE BEST KNOWN NAME IN IRON

Tubular Goods . . .

Tubular Goods Prices, Page 183

Boston—Books have been opened for next year by some mills on casing and tubing, oil country goods for the most part, but not on merchant steel pipe or line pipe. On the former producers are booked into first half. Although steel pipe shipments are heavier, notably by two mills, distributors are short, on galvanized and butt-weld in small sizes especially. There is some reshuffling of pipe accounts and one eastern producer is actively seeking forward volume. Cast pipe buying is active for this period, 2500 tons up for municipalities, and gas utility requirements are heavier. As result of certification for housing, considerable small diameter pressure pipe, will be shipped ahead of expectations, due to availability of pig iron in larger volume for these sizes.

Cleveland—Several bids opened last week in Washington for the purchase or lease of the Big Inch and Little Big Inch pipe lines contained proposals for construction of complementary lines. These included proposals to build a 30-inch natural gas line to serve New York, New Jersey, Philadelphia, Wilmington, Baltimore and the New England area up to and including Boston; and a 30-inch pipeline along the right-of-way of the existing lines. Other bids included proposals to spend $20 million to build a 20-inch line from West Texas oil fields to the western terminal of the Big Inch line; $37.5 million for conversion, extensions and additions to the existing lines.

Seattle—Cast iron pipe demand continues strong but shortages and slow deliveries handicap sellers. Buyers continue to place orders to obtain position on seller's books. Wapato, Wash., will open bids Aug. 12 for 29,560 feet of 6 to 12-inch cast pipe and 40 hydrants.

Rails, Cars . . .

Track Material Prices, Page 183

New York—Following active buying a week ago, domestic freight car buying is light with new inquiry spotty. Current inquiry includes 100 seventy-ton covered hopper cars for the Chicago, Indianapolis & Louisville, in addition to 650 box cars and flat cars previously noted as pending, and 50 fifty-ton lightweight hopper cars for the Illinois Central. The latter are in addition to 1900 miscellaneous freight cars previously noted as pending for this railroad.

Seattle — A Portland, Oreg., manufacturer last week shipped 60 steam locomotives from that port to Russia, the last consignment of a war contract totaling 1207 units.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 183

Pittsburgh — Reinforcing bar buyers hear a variety of replies to their inquiries. Stripped of verbiage, the answers mean simply that there is no more steel for delivery this year; leading producers here have not yet opened books for 1947. As a result of the $8 a ton price handicap under which reinforcing bars are being produced, one mill fulfulled only 50 per cent of its July obligations, while the remaining portion of the rolling schedule was devoted to more profitably priced commodities. Same mill expects, however, to roll all of August's allocated tonnage during August. Big export inquiries involving the rebuilding of devastated areas of Europe are in the wind, which may or may not be an ill wind for hopeful domestic buyers.

Seattle—Demand for reinforcing bars is increasing, with public works calling for large tonnage. Utah Construction Co. and Winston Bros., San Francisco, have a contract at $2,871,796 for a canal and two 24½-foot siphons requiring 6250 tons of reinforcing bars, at the Columbia Basin project.

Bolts, Nuts . . .

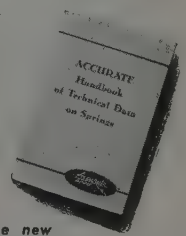
Bolt, Nut, Rivet Prices, Page 183

Washington—Office of Price Administration has granted another price advance of 5 per cent on producers' ceiling prices of bolts, units, screws and rivets, effective July 27. This is in addition to the 7 per cent advance granted April 1, and is accomplished by revoking the previous increase and replacing it with a 12 per cent advance. The advance is to cover wage increases and other cost advances since the prior increase.

Cleveland — Champion Rivet Co., Cleveland, has increased the price of

a better spring service

Product planners with springs on their minds will find it helpful to talk things over with Accurate Engineers. For we're planning better products too—better springs, better engineering and better service. These are really more than plans—they have been tested and proved in Accurate's all-out production of fighting springs. Acuurate men and machines and methods are ready now to produce the precision springs you'll want for your better products . . . whenever you are ready.



Accurate Springs

SPRINGS
WIREFORMS
STAMPINGS

Send for your copy of the new Accurate Spring Handbook. It's full of data and formulae you will find useful. No obligation, of course.

ACCURATE SPRING MANUFACTURING CO.
3823 W. LAKE STREET **CHICAGO 24, ILLINOIS**

large rivets, ½-in. and larger, to 4.75c per lb, base, effective Aug. 1 to compensate for increased labor and material costs. OPA decontrolled large rivets as of July 26. Prior to decontrol, OPA recently allowed an increase in the base price to 4.20c, base, and also allowed a 12 per cent increase on the list of extras. Champion now has gone back to the original list of extras. The 4.75-cent price represents a net increase of ½-cent per lb.

Pittsburgh — Nonintegrated fastener firms in this area are in desperate need of all sizes of steel, with cold nut flats and small rounds particularly scarce. The steel shortage is restricting operations to about 70 per cent of capacity. With order backlogs heaviest in history, and inquiries still strong, there is a general impression here that duplicate orders are not so widespread as had been suspected. Commitments on new business are at mills' convenience, six to nine months.

Price Control Lifted on Track Bolts, Large Rivets

Price control was suspended on track bolts and solid steel rivets, ½-inch and larger, as of July 26, 1946. This action was taken by the Office of Price Administration in amendment 36 to supplementary order 129. Pending clarification of the price situation in these two items, producers generally held quotations unchanged last week on the basis of the base price plus 12 per cent of the base price and extras as permitted under price regulation 147 as amended, the former controlling order. However, one producer of track bolts and another of structural rivets have posted higher prices.

Pig Iron . . .

Increase of $2 per ton allowed by OPA. Shortage continues though more stacks are being added

Pig Iron Prices, Page 185

Washington—Office of Price Administration has announced an increase of $2 per ton on pig iron, effective July 27 and applicable to adjustable pricing contracts retroactive to May 29.

New York—The Troy, N. Y., blast furnace of Republic Steel Corp. is expected to get into full operation soon, as a result of settlement of a 6-month strike of 900 employes at the company's iron mines in Iron Mountain, Port Henry, Mineville and Witherbee, N. Y. The blast furnace had been down for a number of weeks and is resuming production on low phosphorus pig iron for distribution in this country.

As a result of the $2 advance recently granted to most blast furnaces, retroactive as of May 29, the delivered price on No. 2 foundry iron at Newark, N. J., is now $31.20, (Bethlehem Pa., base) and $32.28 at Brooklyn. The delivered prices on basic, bessemer and malleable, at Newark, N. J., (Bethlehem, Pa., base) are $30.70, $32.20, and $31.70, respectively.

Certified tonnage for production this month under Direction 13 is relatively small for delivery in this district and in certain important instances applies to tonnage which had already been scheduled for shipment in August. However, such extra tonnage as will be involved is a burden to furnaces in view of their stringent situation.

Boston—August schedules for pig iron delivery are being completed, based on revisions involving certified tonnages, which in this area are light except for pipe requirements, most of the balance malleable. Several foundries seeking to qualify under Direction 12 have been turned down. Overall factor of certified shipments will have effect on deliveries over balance of this quarter, some melters getting more iron, but at the expense of others without material increase in aggregate melt. Iron inventories are small and numerous consumers are near the bottom of their stocks. Deliveries are slightly heavier and may be bolstered slightly by two Pennsylvania furnaces later this month, but supplies are still spread so thin few are operating near a safe or normal margin.

Cleveland—Advance of $2 a ton in pig iron prices, retroactive on adjustable pricing contracts to May 29, was substantially lower than what the industry required to cover increased costs. The trade does not believe the revision will justify blowing in stacks now idle due to the price factor.

The large DPC furnace here which was blown in July 8 has attained a high rate and is producing steelmaking grades. Open hearths have increased the proportion of hot metal due to scarcity of scrap.

Demand for foundry iron also remains heavy but producers are moving cautiously in filling third quarter books. Bookings are restricted so that space will be available for any additional certified orders which may be received by Aug. 15 for September delivery.

Cincinnati — Shipments of pig iron fail to show expansion and critical shortages are possible in foundries not holding preferential ratings for agricultural and housing programs.

Pittsburgh—Foundries see no immediate prospect of getting more pig iron even though blast furnace production is high, with 50 of the district's 54 stacks in operation. Total Pittsburgh area pig iron output for July is estimated at approximately 1,062,000 net tons, compared to 1,053,070 net tons for July, 1945.

Philadelphia—Consumers of foundry pig iron not able to certify under Direction 13 will have increasing difficulty this month in obtaining iron, although sellers are prorating tonnage not certified, with the result that all regular customers will be able to count on at least some tonnage. To obtain maximum production of foundry iron most producers are confining output to one grade, No. 2 plain, and report many consumers formerly insisting on various analyses are able to use it, even without recourse to alloy briquets.

One district furnace, down for complete relining, is expected to get into

This advertisement is not, and is under no circumstances to be construed as, an offering of this Stock for sale, or an offer to buy, or as a solicitation of an offer to buy, any of such Stock. The offering is made only by the Prospectus; the Prospectus does not constitute an offer by any dealer to sell this Stock in any State to any person to whom it is unlawful for such dealer to make such offer in such State.

100,000 Shares

Dana Corporation

(*formerly* SPICER MANUFACTURING CORPORATION)

Cumulative Preference Stock 3¾% Series A

($100 Par Value)

Price $102 Per Share

Copies of the Prospectus may be obtained in any State only from such dealers participating in this issue as may legally offer this Stock under the securities laws of such State.

Merrill Lynch, Pierce, Fenner & Beane

July 17, 1946

production on basic about Aug. 15. Another furnace switched from basic to foundry iron at the beginning of the month. The leading eastern producer has foundations in for a new blast furnace at Sparrows Point, Md., to have monthly capacity of about 36,000 tons.

Buffalo—Pig iron shortage increases as consumers endeavor to enlarge production and some melters in the East are reported to have suspended operations. Many in this area have curtailed operations and others have abandoned plans for enlarging output. Railroad car shortage has aggravated the situation.

Chicago—Lack of pig iron is holding down output of most foundries in this district and there is little optimism that improvement will occur soon. Steel mills operating blast furnaces need most of their iron production to offset lack of scrap, restricting the amount that might go to the merchant trade. Furthermore, foundries find that directives on iron for expanding housing and farm implement output are reducing tonnage of iron needed and has been going to castings not favored by priority treatment. Of the district's 41 blast furnaces, 37 are operating—highest since June, 1945, with the same number. Inland Steel Co. blew in a sixth furnace last week for steelmaking use.

Seattle—One of the first shipments of foreign pig iron received here in several years arrived last week from Japan. It was reloaded into a vessel for delivery to an Atlantic port. The shipment was 1000 tons.

Scrap . . .

Denial by OPA that higher prices are being considered may release hoarded scrap but supply is still tight

Scrap Prices, Page 186

Washington— Office of Price Administration has emphasized that current ceiling prices for iron and steel scrap are adequate and that no increase will be granted in the foreseeable future. Maximum prices in effect June 30 were restored when the new control act became effective. This announcement is made in expectation that it will result in release of scrap withheld in belief that a price increase was being considered.

Cleveland—Whether it be that hoarded scrap is being released as a result of the declaration by OPA that higher prices are not under consideration, or that fabricators are processing more steel and thus generating more scrap, supply is appreciably better than 30 days ago. However, the situation still is tight, especially in cast grades, which improved during July when over-ceiling prices were paid. Now that ceilings again are in effect the supply has dwindled. While melters in this area are working on short supply in most cases no curtailment in steelmaking has occurred.

C. M. White, president, Republic Steel Corp., states 25 to 30 open hearths are idle now from lack of scrap, compared with about 12 a month ago. Steel production is being maintained, he says, only by using more pig iron, but this has reached an approximate limit. Scrap receipts have fallen from about 60 per cent of requirements to 40 per cent and if this rate is continued scrap stocks at mills will vanish in four to six weeks. Continuance of the scarcity will result in more furnaces being taken off, Mr. White says, with resulting reduction in output of steel.

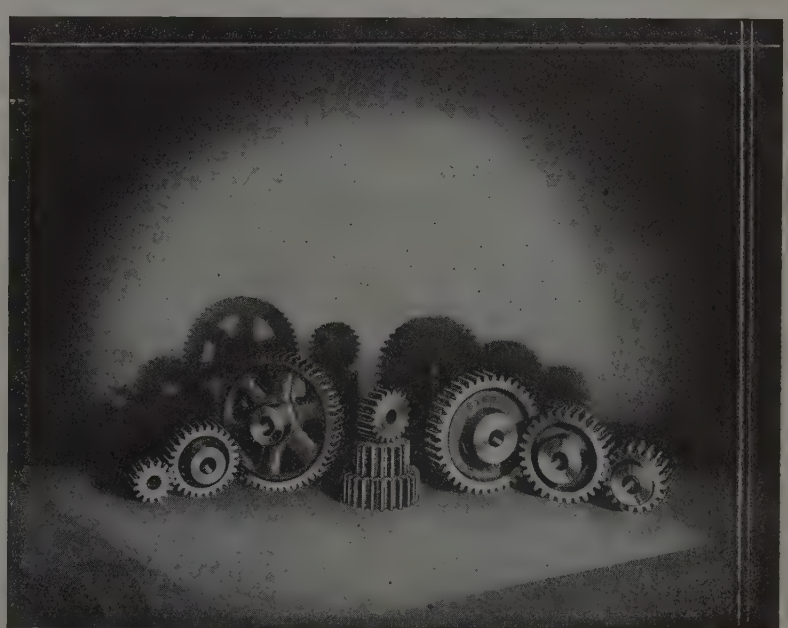
Boston—Volume of undelivered premium price cast scrap, some as high as $30, with which dealers were involved with the return of old ceilings is not large, but a few were scotched. Steel works have been drawing on scrap inventories, increasing ratio in melts to a point that supplies are dangerously low, affecting operations in two cases. All grades are short, the volume of cast unearthed during the higher price period being relatively small. Borings and turnings, with other industrial scrap, are in light supply and volume of unprepared reaching yards is not sufficient to maintain operations; high prices paid for unprepared are primarily due to efforts of yard operators to secure tonnage for operating. Upgrading is apparent at the low phos premium for No. 1 and 2 heavy melting.

New York—Scrap is moving sluggishly, with many in the trade still hopeful that Washington will respond favorably to appeals for higher prices. Sellers point out that steel scrap ceilings have not been changed since April 3, 1941 and that increases in operating costs have made it difficult for yard dealers to make a profit on processing and still be able to offer attractive prices to collectors and producers.

Pittsburgh — Supply of steelmaking scrap in this district is gradually growing tighter, although of all the consuming areas, Pittsburgh is said to be in the best inventory position with probably three weeks to thirty days supply on hand. OPA's restoration has failed so far to pry loose any additional tonnage here. Some observers believe that even the most fantastic price increase would not bring forth sufficient tonnage to satisfy the growing demand, especially in cast grades. Other interested persons say that higher prices would encourage generators and dealers to give up any metal they might have.

Detroit—Steadily mounting automobile assembly schedules are not yet reflected in any appreciable increase in flow of production scrap, automotive lists closing recently not amounting to much over 10 per cent more than the previous month. The Chevrolet list was held up last week for some reason. Dealers who had been holding back tonnages of scrap until the price picture clarified are now releasing this material, following reincarnation of OPA controls on prices, and sources of production scrap which may have been following a similar procedure in the hopes of higher prices probably are doing likewise. Great Lakes Steel Corp., while not comfortable on scrap, is holding approximately to a 60-40 pig iron to scrap ratio in its open hearths.

Chicago—Restoration of OPA and its subsequent statement that current ceilings on iron and steel are adequate and no increase will be granted, has failed to bring noticeable improvement. Flow of material is no greater than a week ago and number of transactions has not



GRANT GEARS Sizes ¼" to 72"—Spur—Bevels—Mitres—Helicals—Worms & Worm Gears—Sprockets—Reduction Units. Also Special Gears. Over Sixty Years Manufacturing Experience

GRANT GEAR WORKS COR. SECOND & B STS. BOSTON, MASSACHUSETTS

gained. In one or two cases here, steel production is being held down by scrap shortage. In another output is being maintained by transfer of some scrap tonnage from the Pittsburgh district.

Philadelphia — While there was a slight improvement in flow of steel scrap following reinstatement of OPA, this has since disappeared, with movement far short of requirements. Several district consumers recently had to curtail because of lack of scrap. No doubt exists that fairly substantial tonnages are being held for higher prices despite discouragement from OPA. Spurt in movement of cast scrap under the higher prices prevailing during the OPA vacation was a revelation to many, as this material was considered the scarcest of all grades. Incidentally, on revival of OPA all unshipped tonnage booked at premium levels was canceled.

Some trade leaders are confident an increase of even $2 per ton would do more to stimulate flow of steel scrap than any other factor. Government scrap sold recently in the Philadelphia district included 3000 tons of unprepared mild steel at the Philadelphia navy yard, which went to Luria Bros. & Co. at $15.77 on cars at the yard, and 1000 tons of machinery scrap, including metals, at the same yard, which went to the Legion Realty Co., New York, at $30.85. The latter price was substantially higher than had been offered previously, former bids ranging from $22 to $26. Luria Bros. & Co. also bought 3000 tons of government scrap at the yard of the New York Shipbuilding Co. at Camden, N. J. This tonnage included high-tensile and mild-weld steel, prepared and unprepared, and went at $18.10, on cars at the yard.

Warehouse . . .

Warehouse Prices, Page 184

Philadelphia—Jobbers generally expect improvement in August business, as mill tonnage is coming through more freely. July sales varied as between warehouses, from a few points below to a few points above the June level. Pressure for sheets, especially galvanized, is outstanding, although there is considerable demand for light angles and shapes and small carbon bars. One distributor reports that business last month was ahead of the average for all of last year.

New York — Mill shipments for the past week or so have shown appreciable improvement, with a result that jobbers anticipate a more active month in August than in July, which, as it developed, was about on a parity with June. Steel distributors point out that for a long time sales have been limited only by the volume of incoming shipments from mills. Hence, with mill shipments now improving, they anticipate a more active market in the current month, despite the fact that normally business is adversely affected by vacations.

Iron Ore . . .

Iron Ore Prices, Page 184

New York — While manganese ore prices abroad are as strong, if not stronger, than ever, prices at American ports, duty paid, continue to ease, due to lower ocean and insurance rates. Commercial transactions on 48 per cent ore are being consummated at about 68 to 70 cents per gross ton unit, compared with 73 to 75 cents recently and the official prices of Metals Reserve of 85 cents, New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans.

Most of the manganese ore now purchased is through direct negotiation, it is said, with little tonnage drawn from government stocks. Tonnage involved in current commercial transactions is principally from India, South Africa, Brazil and the Gold Coast. All shipments from Russia, it is asserted, are for government account, going directly into its stockpiles.

Refractories . . .

Refractories Prices, Page 185

Pittsburgh—Like Italian stone masons waiting for the leaning tower of Pisa to topple, refractories people here are looking for plenty of relining jobs on war-pushed blast furnaces and stoves. Big tonnages were and still are being squeezed from old linings, and while the pig iron shortage continues, it appears that even more output will be expected while the repair work waits. In addition to approximately 20 stacks that need to be relined, it is conservatively estimated that there are between 3000 and 4000 operating coke ovens in this area that are over 25 years old.

The delivery scene here is fairly bright. Refractory producers are able to meet commitments; with the exception of certain high alumina and other special grades, there is no dearth of brick. Demand for ladle brick is strong, moving in proportion to ingot production, which this week remained unchanged at 95 per cent of theoretical capacity.

Most Auto Leaders Think Meeting With Union Futile

Pointing to the futility of industry-wide management-union conferences for improving automobile production, George T. Christopher, president, Packard Motor Car Co., last week listed 12 strike-bound suppliers and continuing shortages of materials as limiting Packard production.

George T. Mason, president, Nash-Kelvinator Corp., took a similar position and told the UAW-CIO his company could not in fairness discuss specific details of materials and parts shortages with competitors. He mentioned absenteeism and unrest in plants as factors which the union might try to alleviate.

Henry Ford II told the UAW-CIO nothing could be accomplished by an industry-wide conference and added Ford plants were now in danger of another shutdown because of strikes in suppliers' plants.

H. L. Weckler, Chrysler vice president, said his company preferred individual rather than "industry-wide town meeting" conferences, adding that since V-J Day there had been 142 strikes in plants of Chrysler suppliers, 17 still in effect, plus 39 strikes in Chrysler's own plants.

Tentative acceptances to the union conference proposal were received from Kaiser-Frazer, Willys-Overland and Studebaker.

Tops on Speed in Handling
Coil Stock
COIL stock, fed by LITTELL Automatic Centering Reels, insures efficient, fast, accurate, economical production. It permits continuous feeding, prevents waste of material and provides automatic roll feeding direct from coils.
LITTELL Reels automatically center coils. Ball bearing, they are easy running and insure free-moving coils for accurate feeding. Adjustable stock support holds up loose loops of coils and permits very light brake adjustment.
Plain and motor-driven types. Capacities, 300 to 6,000 lbs. Coil Cradles can be supplied for coils up to 20,000 lbs.
LITTELL also makes Roll Feeds, Dial Feeds, Feeding and Straightening Machines, Scrap Winders, Air Blast Valves, Pres-Vac Safety Feeders and Mechanical Pickers.
REQUEST BULLETINS
SPEED WITH SAFETY
F.J. LITTELL MACHINE CO.
4165 RAVENSWOOD AVE., CHICAGO 13, ILL.

Metallurgical Coke . . .

Coke Prices, Page 183

Pittsburgh—With the resurrection of OPA, unauthorized Connellsville beehive coke price increases of July 1 suffered a relapse to the June 30 level. In the temporarily confused price scene, producers here are accepting new business on the old basis subject to any authorized advances. It is understood that upwardly adjusted prices will be released by the government soon, possibly this week. Meanwhile sellers may collect prices billed during the 24-day OPA coma. At present beehive furnace coke, machine-drawn, reverts back to $7.50, and hand-drawn becomes $8.00 per net ton. Foundry coke price is now $8.50 to $8.75, compared to $9.25 to $9.75 earlier in July.

Nonferrous Metals . . .

Nonferrous Prices, Page 188

New York—Little early relief in the present tightness in copper is in prospect, with fabricators having a theoretical shortage as of the end of June of more than 400,000 tons of refined copper. They consumed during that month 92,241 tons, against 93,007 tons in May. Meanwhile, small tonnages are being shipped to consumers on the basis of ceiling price ruling at time of delivery.

A meeting early in the week between copper producers and Metals Reserve officials was called to revise the wording on foreign contracts, with no decision reached. The overall price ceiling question, of special interest to the trade since revival of OPA, was not discussed and the entire matter is still open. While some revisions in prices may eventually be made, leading trade interests doubt if OPA will raise copper prices at present. Meanwhile, some clarifying statement from Washington would prove helpful, relieving an uncertainty which still exists in many quarters.

Uncertainty with respect to the future trend in prices is also reflected in lead and zinc, with offerings light. Some trading in lead is proceeding on an 8.25c, New York, basis, ceiling level, but few substantial tonnages are involved. Sluggishness is due in part to the fact that some metal is being held back by sellers in the hope there may be an adjustment in prices.

Zinc prices have been rolled back to the 8.25c, East St. Louis level, which prevailed June 30, but in view of the uncertainty regarding ores and concentrates purchased during the period when OPA was not functioning and 9.50c was the ruling price, little zinc is being moved, and invoices are being held up, it is said. Until there is clarification of the whole price outlook little improvement in sales is expected.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2800 tons, reconstruction blast furnaces Nos. 11 and 12, South Chicago, Ill., for Carnegie-Illinois Steel Corp., to American Bridge Co., Pittsburgh.

1050 tons, Brooklyn-Battery tunnel approach on Manhattan side, New York City, through Gull Construction Co. Inc. and L. G. De Felice & Son, to Bethlehem Steel Co., Bethlehem, Pa.

610 tons, laboratory building, Federal Telephone & Telegraph Co., Nutley, N. J., through George A. Fuller Co., New York, to American Bridge Co., Pittsburgh.

600 tons, manufacturing building, Cicero, for Edison General Electric Co., to Joseph T. Ryerson & Son Inc., Chicago.

530 tons, paper mill extension, Pasadena, Tex., for Ebasco Services Inc., to Mosher Steel Co., Houston, Tex.

500 tons, refinery expansion, Harvey, Ill., including 350 tons in building L and 150 tons in building H, for Sinclair Refining Co., to Joseph T. Ryerson & Son Inc., Chicago; Austin Co., Chicago, contractor; bids July 13.

340 tons, New York state highway bridge, BRP 46-1, Bronx county, New York, through Rusciano Sons Corp., New York, to American Bridge Co., Pittsburgh.

330 tons, Brooklyn-Queens connecting highway, contract No. 4, through Del Balso Construction Corp., New York, to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, addition to Sabine Works of du Point interests at Orange, Tex., to Virginia Bridge & Iron Works, Roanoke, Va.

250 tons, manufacturing building for Standard Pressed Steel Co., Jenkintown, Pa., to Belmont Iron Works, Eddystone, Pa.

120 tons, service building for State Equipment Co., Harrisburg, Pa., to Phoenix Bridge Co., Phoenixville, Pa.

Unstated tonnage, 13 bridge cranes, naval shipyard, San Francisco, Bureau of Yards and Docks, Navy, to Cyclops Iron Works, San Francisco, $344,910, spec. 17578.

STRUCTURAL STEEL PENDING

6025 tons, steel sheet piling, Bureau of Supplies and Accounts, Navy, San Francisco; Carnegie-Illinois Steel Corp., Pittsburgh low, shipments from Gary starting October and ending from Homestead in March; bids July 18.

1300 tons, approximately, Battery Parking Garage, lower Manhattan, New York Port Authority, Corbetta Construction Co., New York, reported only bidder on general contract.

1200 tons, grade separations on Wilbur Cross Parkway, Connelly and Dixwell avenues, Hamden, Conn.; American Bridge Co., Pittsburgh, low, bids July 29.

1000 tons, power plant, cofferdam, etc., St. Mary's Falls, Sault Ste. Marie, Mich., for U. S. Engineer; bids Aug. 14.

850 tons, sports arena, Worcester, Mass.

800 tons, 1198-foot, 13-span continuous dock girder bridge with one bascule span, Hampton Harbor, N. H.; bids Aug. 15, highway dept., F. E. Everett, commissioner, Concord, N. H.

500 tons, hangar, Seattle, for Northwest Airlines.

250 tons, housing project, South Boston, Mass.; bids in.

150 tons, pier, Portland, Me.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1625 tons, expansion of tin mill, Gary, Ind., for Carnegie-Illinois Steel Corp.; company will furnish own requirements.

200 tons, new store, Chicago, for Baskin Clothing Co., to Joseph T. Ryerson & Son Inc., Chicago; Henry Ericsson Co., Chicago, contractor; bids July 5.

REINFORCING BARS PENDING

6250 tons, two siphons, 24½ feet diameter, Columbia Basin project; general join contract to Utah Construction Co. and Winston Bros., San Francisco.

1150 tons, sewage plant, Quincy, Mass.

300 tons, building, Chicago, for Weinberg Corp.; bids Aug. 12.

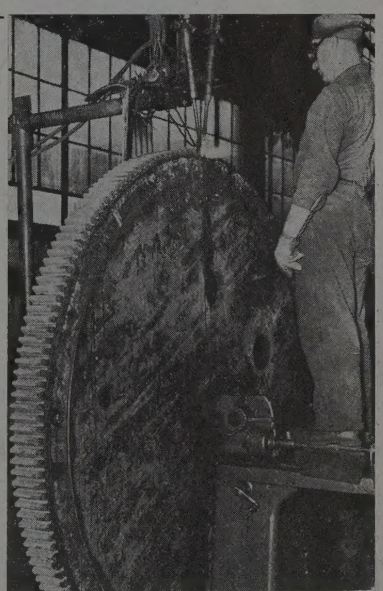
250 tons, bridge and approaches, Hampton

Lakeside's FLAME HARDENING

***Toughens* THE TEETH of a GIANT**

and Makes Small Gears Do a Giant's Job!

Diameter: 8 feet. A good example of flame hardening applied to numerous points of wear, uniformly. It's a perfected process, pioneered by us in 1930. Lakeside flame hardening provides the high performance and long wear of costly steel at the spots where it's needed. And based on accepted metallurgical standards, Lakeside is the logical source for *all* your steel treating as well.

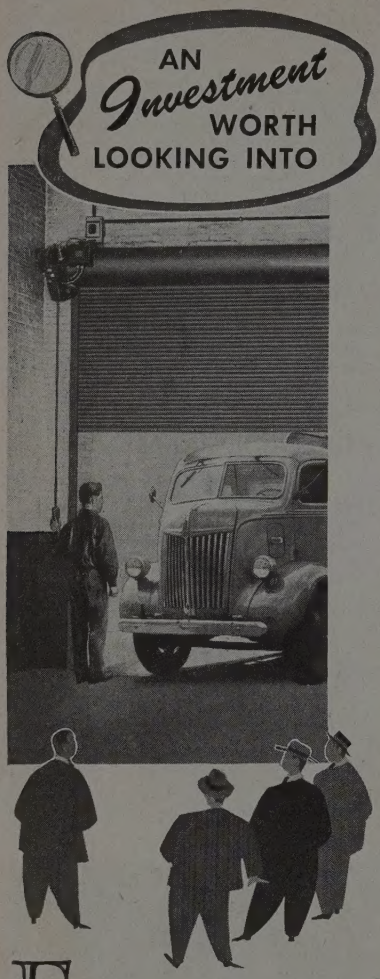


Our Services: Induction Hardening, Annealing, Aerocasing, Heat Treating, Bar Stock Treating and Straightening, Flame Hardening, Normalizing, Cyaniding, Nitriding, Chapmanizing, Pack or Gas Carburizing, Sand Blasting, Tensile and Bend Tests.

METAL TREATING INSTITUTE

THE LAKESIDE STEEL IMPROVEMENT CO.

3418 Lakeside Avenue CLEVELAND, OHIO Phone HEnderson 9100



FROM every standpoint — materials, workmanship, operation, and economy — Kinnear Rolling Doors prove a top-notch, long-term investment. These doors, individually built by skilled craftsmen, feature a strong, flexible steel curtain of time-proved, interlocking-slat construction. With spring-counterbalanced *coiling upward action*, the doors roll quickly, easily into a small area *above* the lintel. They are rugged and durable . . . resist weather, wear, and fire. Smoothly operating, they save time and manpower. Expertly constructed, they reduce maintenance costs. Kinnear Rolling Doors may also be equipped with effort-saving Motor Operators and time-saving, conveniently located push-button control stations. For plant security and operating efficiency, first investigate, then invest in Kinnear Rolling Doors. Send for details today!

THE KINNEAR MANUFACTURING CO.
Factories: 1780-1800 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, California
Offices and Agents in Principal Cities

KINNEAR ROLLING DOORS

Harbor, N. H.; bids Aug. 15, state highway department, Concord, N. H.

Unstated, $190,000 telephone plant at Centralia, Wash.; CPA has approved.

Unstated, $100,000 residence hall, Western Washington College of Education, Bellingham, Wash.; bids Aug. 21.

Unstated, $500,000 classroom, University of Washington, Seattle; general contract to Strand & Co., Seattle.

PLATES . . .

PLATES PLACED

200 tons or more, 120-foot welded steel barge for Coulee project, to American Bridge Co., Denver, low at $63,860.

PLATES PENDING

200 tons or more, water system penstock, Seattle; Paul Jarvis Inc., Seattle, low at $80,587.

Unstated, 450, 28-foot sheet steel piles; bids to U. S. engineer, Seattle, Aug. 5.

Unstated, 300-foot inland ferry, for Puget Sound Navigation Co., Seattle; general contract to Todd Pacific Shipyards Inc., Seattle.

Unstated, 70 welded steel pontoons, for U. S. engineer, Portland; Gunderson Bros. Engineering Co., Portland, low, $74,550.

Unstated, 210-foot steel barge, for Hood River, Oreg.; bids Aug. 5.

Unstated, 96-inch steel pipe, for Roza division, Yakima project; bids to Reclamation Bureau, Yakima, Wash., Aug. 12.

Unstated, 15,720 feet, 24-inch, 5600 feet 18-inch steel water pipe; bids to I. S. Fetterman, purchasing agent, Spokane, Wash., Aug. 1.

Unstated, 32,520 feet 14-inch, 8-gage, welded steel pipe for U. S. engineer, Portland, Oreg.; Oregon Culvert & Pipe Co., Portland, low, $64,460.

Unstated tonnage, steel penstocks, Colorado-Big Thompson project, Bureau of Reclamation, Denver, Darby Products of Steel Plate Corp., Kansas City, Kans., apparently low on bid of $677,330 f.o.b. shipping point, spec. 1347.

PIPE . . .

STEEL PIPE PENDING

925 tons, four to 12-inch, Metropolitan District Commission, Hartford, Conn.; R. D. Wood Co., Florence, N. J., low.

550 tons, 20-inch, Metropolitan District Commission, Boston; R. D. Wood Co., Florence, N. J., low.

400 tons, six to 12-inch, Clinton, Me., contractors' letting.

300 tons, mostly six-inch, Hanson, Mass.; bids Aug. 20, contractors' letting.

260 tons, mostly 20-inch, Saugus, Mass.; R. D. Wood Co., Florence, N. J., low.

100 tons, eight to 10-inch, Northampton, Mass.; bids in.

RAILS, CARS . . .

RAILROAD CARS PLACED

Dewey Portland Cement Co., Kansas City, Mo., twenty 70-ton steel covered hopper cars, to American Car & Foundry Co., New York, for Madison, Ill., plant.

RAILROAD CARS PENDING

Chicago, Indianapolis & Louisville, 100 seventy-ton covered hopper cars, bids asked; these are in addition to 650 box cars and flat cars previously noted as pending.

Detroit & Toledo Shoreline, 50 seventy-ton hoppers.

Graysonia, Nashville & Ashdown, 500 seventy-ton covered hoppers.

Great Northern, 300 fifty-ton box cars.

Illinois Central, 50 fifty-ton light weight hopper cars, pending, in addition to 1900 miscellaneous freight cars previously noted as active.

CONSTRUCTION AND ENTERPRISE

ALABAMA

BIRMINGHAM—Tennessee Coal, Iron & Railroad Co. plans a diesel locomotive shop to cost about $175,000.

CALIFORNIA

BERKELEY, CALIF.—Trainmobile Co., Seventh and Gilman Sts., has let contract to Maxwell Read, 939 33rd St., Oakland, Calif., for a one-story plant covering 30,000 square feet, to cost about $140,000.

LOS ANGELES—National Tank & Mfg. Co., 8201 Santa Fe Ave., has permit for erection of an addition to the crane runway, 40 x 60 feet, to cost about $12,000.

LOS ANGELES—H. Kramer & Co., 1343 West 21st St., Chicago, have plans for a 125 x 200-foot foundry and 50 x 100-foot warehouse. L. S. Hirschfeld, 160 North LaSalle St., Chicago, is architect.

LOS ANGELES—Eastern Machine Works, organized by Einar D. Johnson and Titus Norton, is conducting its operations at 5049 Exposition Blvd.

LOS ANGELES—Michigan Screw Products & Mfg. Co. has been formed by William McCrory and Earl A. Sutton and has located at 1241 Riverside Drive.

LOS ANGELES—New Process Tool Works has been formed by Roy A. Sparling and William A. Shirley and has established operations at 7807 Compton Ave.

MONTEBELLO, CALIF.—Union Iron & Steel Co., 1600 North Indiana St., Los Angeles, has building permit for an addition at 7300 Telegraph Rd., 42 x 156 feet, to cost about $33,000.

PASADENA, CALIF. — Latisteel Inc., 3273 East Foothill Blvd., has CPA approval for a plant addition with 5500 square feet floor space, to cost about $30,000.

WILMINGTON, CALIF.—Quality Machine Works has building permit for a machine shop 55 x 60 feet at Fries Ave. and C St., to cost about $10,000.

CONNECTICUT

BRIDGEPORT, CONN.—Casco Products Corp., 512 Hancock Ave., is taking bids on a 40 x 60-foot boiler plant and equipment. Westcott & Mapes Inc., 109 Church St., New Haven, Conn., are engineers.

ILLINOIS

MOUND CITY, ILL.—City clerk has plans for a sewage treatment plant and auxiliaries, to cost about $150,000. Warren & Praag Inc., 447 Standard Bldg., Decatur, Ill., are engineers.

WESTVILLE, ILL.—City plans sewerage system and treatment plant to cost an estimated $265,000. Caldwell Engineering Co., 803 West College St., Jacksonville, Ill., is engineer.

KANSAS

KANSAS CITY, KANS.—Gustin-Bacon Mfg. Co., Fairfax Industrial District, has let contract to Collins Construction Co., 912 Baltimore St., for a manufacturing plant to cost about $400,000.

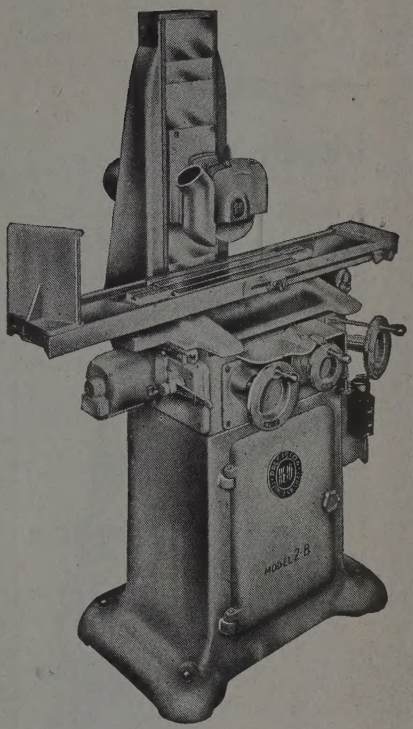
KANSAS CITY, KANS. — Commercial Equipment Co., 1416 McGee Place, is having plans drawn for a manufacturing plant in Fairfax district, to cost $150,000.

MARYLAND

BALTIMORE — Consolidated Gas, Electric Light & Power Co., Baltimore, has CPA approval for an addition and installation of turbo-generator at Riverside power plant; generator is for 60,000 kw, and includes con-

PRECISION REID SURFACE GRINDERS

CONTROLS
"at Your Fingertips"



IT'S A RARE OCCASION when replacement parts are necessary for Reid *Precision* Surface Grinders.

Moving parts are mounted in Timken Tapered Roller Bearings, Ball-Bearings and Oilite Bushings.

All shafts are hardened and ground.

Efficient, Simplified, Lubrication.

These important features assure you exceptional Precision results, extra long wearing qualities, and ease of operation with controls

"At Your Fingertips."

ILLUSTRATED IS THE REID MODEL 2-B ALL-ELECTRIC POWER-FEED

The Reid Model 2-C hand-feed also is an exceptionally fine machine for tool, gage, die and certain production grinding.

MACHINES EQUIPPED FOR WET GRINDING IF REQUIRED

EXCELLENT DELIVERIES

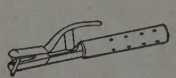
DISTRIBUTORS CONVENIENTLY LOCATED IN ALL SECTIONS
WRITE DEPT. C FOR ILLUSTRATED BULLETIN AND PRICES

REID BROTHERS COMPANY, INC.
BEVERLY MASSACHUSETTS

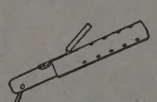
SPECIFY TWECO !!
Electric Welding Cable Connections
for Maximum
Welding Efficiency

Available Through Leading Welding Supply Distributors all Over the United States and Canada

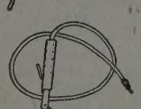
"TWECOTONG" Electrode Holders feature simplicity in design and use. Made in 300 and 500 ampere sizes, fully and semi-insulated models. Has tubular "keyed" glass insulation.



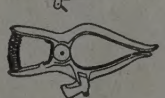
TWECO "HOL-GRIP" Electrode Holders grip rods at 45° and 90°. Easy one-hand spring actuated operation. Made in 150, 200, 300 and 500 ampere sizes, all fully insulated.



TWECO "HOL-GRIP" Jr. 150 and No. 200 are furnished with 5' or 10' quick attach whip cable for hard-to-get-at jobs not adapted to regular equipment.



TWECO "REDHEAD" Ground Clamps provide a quick, positive and portable ground. Welding cables run cooler, last longer. Made in Midget 125 ampere, Jr. 300 and Sr. 500 ampere sizes.

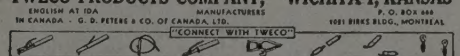


Write for your copy of the **TWECOLOG** giving data and prices on America's only complete line of Electrode Holders, Clamps, Connectors, Terminals and TWECO-LUGS for Electric Welding. See your TWECO jobber.

TWECO PRODUCTS

TWECO PRODUCTS COMPANY, WICHITA 1, KANSAS
ENGLISH AT IDA MANUFACTURERS P.O. BOX 668
IN CANADA - G. D. PETERS & CO. OF CANADA, LTD. 1081 BIRKS BLDG., MONTREAL

"CONNECT WITH TWECO"



BEST BY HI-GRADE TEST
Trade Mark Steel
SHOT AND GRIT

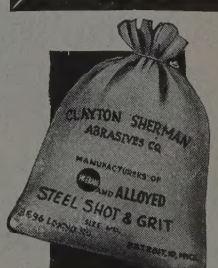
For Toughest Blast Cleaning and Surface Peening Operations

SHOT—

- Controlled screening and grading.
- Withstands repeated strain, stress and wear in blasting equipment.
- ITS TENSILE STRENGTH AND TOUGHNESS IS ESPECIALLY ADAPTABLE FOR PEENING.
- Uniform roundness of shot. Pellets are fully utilized on impact.
- Lack of irregular shapes and hollows results in highest efficiency.
- Free from dust and other residue.
- Slowness in wearing down produces longer life and maximum usage.
- Its secret alloying and tempering process prevents rusting and reduces impact fractures.

GRIT

Hi-Grade Grit is thicker, sturdier, tougher. Exceptional abrasive qualities. Its construction gives longer usage. Definitely reduces operating costs.



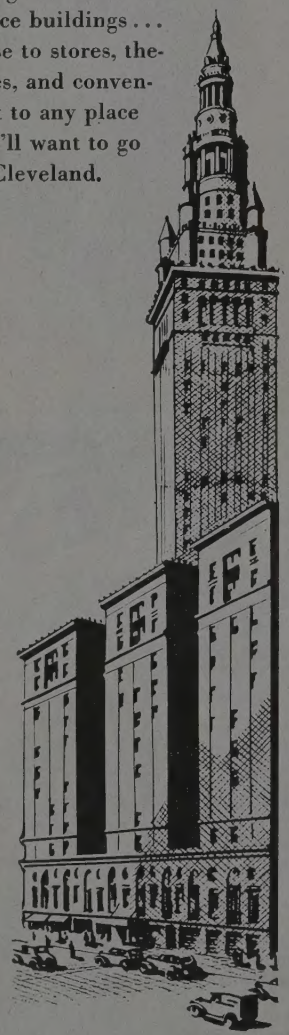
Write for FREE Test Material

25 Sizes To Meet Your Problem

MANUFACTURERS
CLAYTON SHERMAN ABRASIVES COMPANY
3896 LONYO ROAD • DEPT. C • DETROIT 10, MICH.

A warm and friendly welcome . . .

a quiet, comfortable, sleep-inviting room . . . right in the heart of downtown Cleveland. Hotel Cleveland adjoins Union Passenger Terminal, garage and Terminal office buildings . . . close to stores, theatres, and convenient to any place you'll want to go in Cleveland.



HOTEL CLEVELAND

Cleveland, Ohio

denser and coal-handling equipment. Cost is estimated at about $7 million.

BALTIMORE—City has let contract for additional facilities at Black river sewage plant to J. Matriciana, 229 Exeter St., at $646,875.

MICHIGAN

DETROIT—E-Z-Lyft Jack Co., 1611 National Bank Bldg., has been incorporated with $100,000 capital to manufacture mechanical and hydraulic vehicle jacks, by William P. Brown, 18939 Brinker St.

DETROIT—Oakwood Precision Grinding Co., 410 South Oakwood Ave., has been incorporated with $25,000 capital to machine and fabricate metal and plastic products, by Jesse D. Haskett, same address.

DETROIT—Schmieg Industries Inc., 308 Piquette Ave., has been incorporated with $500,000 capital to manufacture fabricated sheet metal products, by John D. Schmieg, same address.

DETROIT—Edgar T. Ward's Sons Co. is having plans prepared by Jahr & Lyman, Dearborn, Mich., architects, for a steel warehouse building estimated to cost about $150,000.

DETROIT—Plans for a power plant costing $850,000 for the Ionia state hospital are being drawn by O'Dell, Hewett & Luckenbach, 2317 Dime Bldg.

PORT HURON, MICH.—Acheson Colloids Co., Port Huron, plans one and two-story plant and laboratory, estimated to cost about $125,000.

MINNESOTA

BENSON, MINN.—Western Minnesota Power Association, L. Sable, secretary, Benson, plans power house with three 1000 kw diesel generators and auxiliaries, to cost about $400,000. General Engineering Corp., 2950 Chicago Ave., Minneapolis, is consulting engineer.

MISSISSIPPI

JACKSON, MISS.—J. J. Halbert, city engineer, will take bids Aug. 7 for an auxiliary pumping station and intake at the municipal waterworks, to cost about $150,000.

MISSOURI

BOWLING GREEN, MO.—City has approved bond issue for $175,000 for power plant equipment, auxiliaries and lines. Russell & Axon, 6635 Delmar Blvd., St. Louis, are engineers.

NEW YORK

LONG ISLAND CITY, N. Y.—Universal Steel Equipment Co., 127 West 23rd St., New York, has plans for a one-story factory building on 47th Ave., estimated to cost about $150,000. W. Kohlhausen, care company, is architect.

OHIO

CLAY CENTER, O.—Kelley Island Lime & Transport Co., Leader Bldg., Cleveland, plans steel crusher and screening buildings, 40 x 100 x 30 feet, 30 x 75 x 20 feet and 36 x 75 x 80 feet, to cost over $100,000. Company also plans buildings at plant in Gibsonburg, O., to cost about $100,000.

CLEVELAND—Wright Mfg. Co., Franklin B. Wright, 1161 Argonne Rd., South Euclid, O., president, has leased quarters at 2125 East Winter St., Delaware, O., for manufacture of automatic gas water heaters, with plans for electric water heaters later.

CLEVELAND—Freeway Washer & Stamping Co. has been incorporated to manufacture ferrous and nonferrous products, by Clifford A. Rooke, president, 9310 Meech Ave., and Kenneth A. Honroth.

CLEVELAND—Cleveland Tube Fabricating Co. has been formed by E. J. Powers of the Powers Perma Pak Co., 3370 Theurer Court, to manufacture tubular furniture and toys. A plant is being prepared at 3995 Jennings Rd., for which some additional equipment is required.

COLUMBUS, O.—National Cylinder Gas Co., 100 North Skidmore St., plans an oxygen and acetylene plant to cost about $150,000.

EAST PALESTINE, O.—L. W. Nash Co. has been formed by Leonard W. Nash, general manager of the Salem, O., plant of E. W. Bliss Co., and associates, with 2500 shares no par value, to manufacture rolling mill equipment. Company has acquired part of former plant of McGraw Tire & Rubber Co.

GIRARD, O.—American Weather Window Inc. will build a one-story plant 66 x 300 feet on Harry St., replacing the present plant at 2857 Wilson Ave., Youngstown. A. H. Stringer is president.

NILES, O.—Berline Enterprises Inc. has been incorporated with $25,000 capital to manufacture machines and parts, by Paul L. Berline, 905 Vienna Ave.

SPRINGFIELD, O.—Ohio Edison Co., 25 East Boardman St., Youngstown, plans an addition to its steam power plant, including turbine and generator to produce 23,000 kw, to cost about $2,500,000.

STEUBENVILLE, O.—Tri-State Tool, Die & Stamping Co. has been incorporated with $100,000 capital, by N. Hart Cohen, statutory agent, and associates.

OREGON

PORTLAND, OREG.—Product Engineering Co. has moved to new quarters at 4707 SE Seventeenth St., where it will specialize in die casting and metal products with expanded facilities.

PENNSYLVANIA

JENKINTOWN, PA.—Standard Pressed Steel Co. has let contract to Townsend & Elfreths, 1700 Sansom St., Philadelphia, for a plant addition costing over $50,000. Widdicombe Engineering Co., 117 South Seventeenth St., Philadelphia, is engineer.

MORTON, PA.—Piasecki Helicopter Corp., Sharon Hill, has let contract to Warck & Co., 1700 Sansom St., Philadelphia, for a plant and office building estimated to cost about $75,000. Rosengarten & Kraemer, Old Broad Street Station Bldg., Philadelphia, are engineers.

TENNESSEE

CHATTANOOGA, TENN.—Crane Co., 1317 Chestnut St., plans plant for manufacture of heating boilers, bathtubs and radiators, to cost over $250,000.

TEXAS

CLEVELAND, TEX.—Tennessee Gas & Transmission Co., Commerce Bldg., Houston, Tex., is taking bids for a compressor station with 8000 hp, to cost about $800,000. Company also plans similar station with 9000 hp at Natchitoches, La.

WASHINGTON

SEATTLE—Bernth & Co., Inc. has been incorporated with $16,000 capital to fabricate metal products, by Ivar Bernth and associates, 3493 Klickitat St.

YAKIMA, WASH.—Decoto Bros. have plans for erection of a machine shop at 711 South First St., to cost about $25,000.

WISCONSIN

MANITOWOC, WIS.—Heresite Chemical Co., 822 South Fourteenth St., has let contract to Kasper Construction Co., 1203 North Sixteenth St., for a two-story 73 x 134-foot plant addition costing about $75,000. P. Brandt, Dempsey Bldg., is architect.

WAUWATOSA, WIS.—Empire Level Mfg. Co., 717 South Sixth St., Milwaukee, has let contract to North Shore Construction Co., 1721 East Lake Bluff Blvd., Milwaukee, for a 180 x 190-foot shop building, to cost about $65,000. E. A. Steubenrach, 708 Erie Ave., Sheboygan, Wis., is architect.